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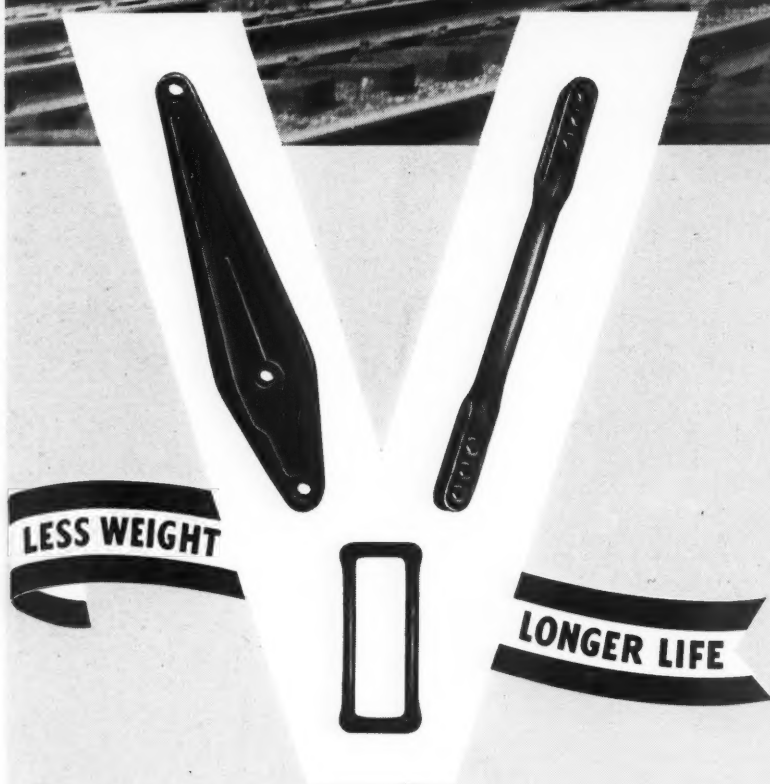
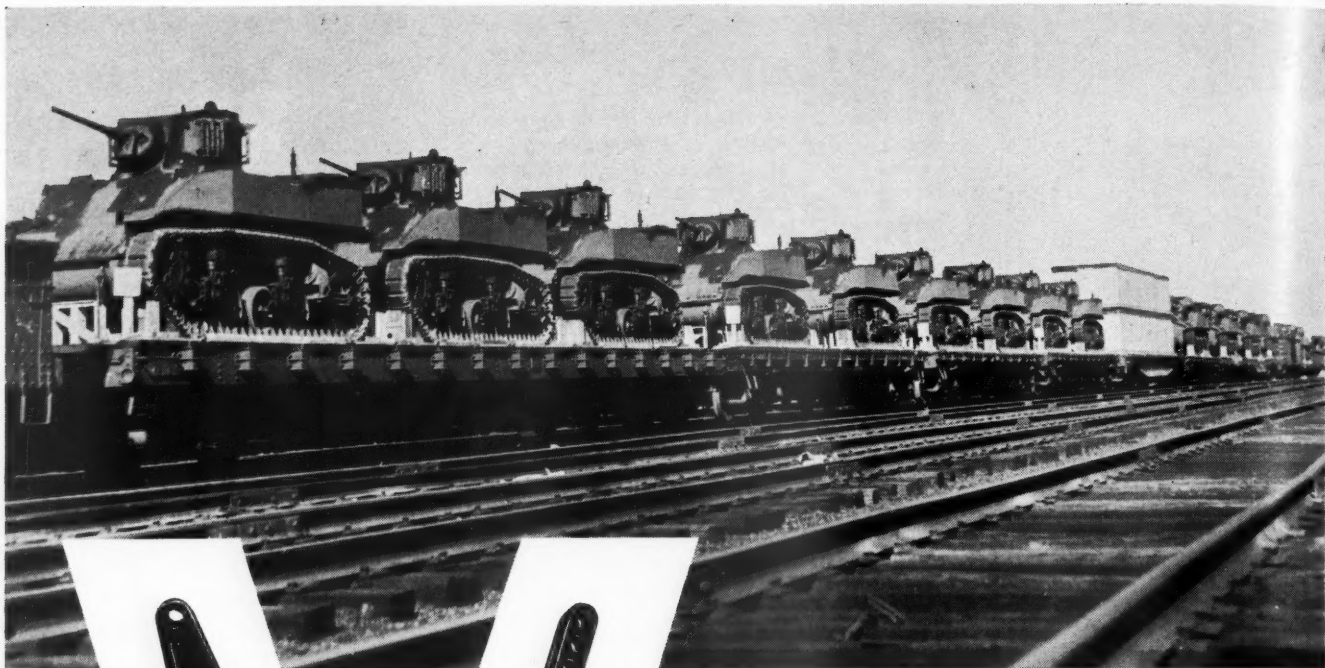
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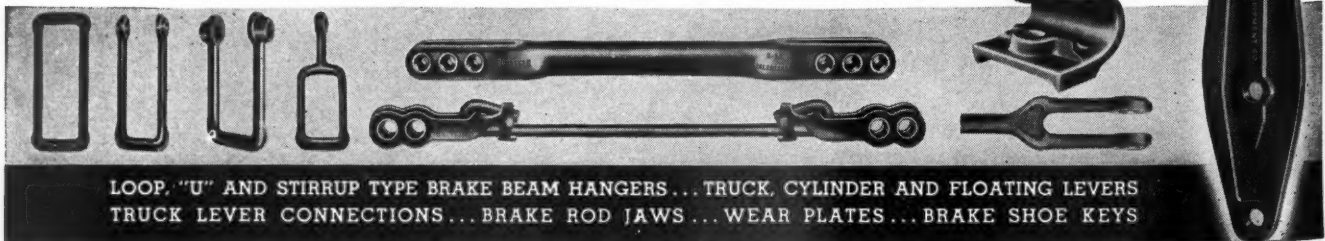
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## RAILWAY AGE

### Traffic Increase Continues Above Forecast

The increase in freight traffic (revenue ton-miles) handled by the railways in April was almost 24 per cent over April, 1942. An increase of only 10 per cent was until recently, and apparently still is, the forecast for the entire year based on government estimates of production and commodity movement.

Ton-mile figures are as yet available only for January this year; but it is possible on the bases of freight revenues and carloadings to estimate ton-miles in February, March and April. A tabulation showing the relationship between average weekly carloadings and actual monthly revenue ton-miles in the thirteen months ending with January, 1943, is given herewith.

Relationship Between Carloadings and Revenue Ton-Miles

	Avg. Weekly Carloadings	Rev. Ton-Miles (000)	Avg. Monthly Ton-Miles per Weekly Carload	% Relationship of Ton-Miles per Carload Jan. '42 = 100
1942				
Jan. ....	771,655	42,962,302	55,675	100
Feb. ....	780,693	40,810,773	52,275	94
Mar. ....	792,860	48,255,531	60,862	109
April ....	837,760	49,997,495	59,680	107
May ....	834,143	54,270,231	65,061	117
June ....	846,442	53,852,328	63,621	114
July ....	830,392	56,956,174	68,589	123
Aug. ....	870,190	58,626,310	67,372	121
Sept. ....	875,915	58,155,496	66,394	119
Oct. ....	902,409	62,160,196	68,882	124
Nov. ....	809,013	56,958,793	70,405	126
Dec. ....	708,616	55,030,990	77,660	139
1943				
Jan. ....	706,170	55,120,900	78,056	140
Feb. ....	763,910	54,900,000*	.....	.....
Mar. ....	768,356	62,600,000*	.....	.....
April ....	785,007	61,800,000*	.....	.....

\* Estimated.

In January, on the average, each car loaded actually produced 78,056 revenue ton-miles and average revenue per ton-mile was 9.34 mills. Assuming that the relationship between cars loaded and revenue ton-miles and revenue per ton-mile have not changed materially since, freight earnings in February and March, and average weekly loadings in February, March and April indicate that revenue ton-miles were 54.9 billions in February, 62.6 billions in March and 61.8 billions in April. The percentage increase in ton-miles in the first quarter of the year was, therefore, about 30.8 per cent, and in the first third of the year about 28.8 per cent and traffic in March apparently exceeded the previous all-time monthly record made in October, 1942. That the increase in April was relatively smaller than in the first quarter was partly due to strikes in the coal mines which began late in that month.

It may be that a deceleration of the increase in traffic has begun and will continue. But there is as yet little in the data available to support this view, and no reason for questioning that, as usual, it will be larger in each of the last two thirds of the year than it was in the first third. And total car surpluses were smaller in the first third of the year than ever before in that period, and there were some shortages.

It was on the basis of a 10 per cent increase in traffic in 1943 that the War Production Board made its current allocations of equipment and materials to the railroads—i.e., only 20,000 freight cars and 100 switching locomotives for the first half of the year and only 286 road locomotives for the first nine months. The increase of 28.8 per cent in the first third of the year would be 8 per cent for the entire year if

Efficiency  
FOR VICTORY

the wholly improbable occurred, and there was no further increase at all in 1943 over 1942. And yet it seems evident that the War Production Board is persisting in its original estimates of production and traffic in 1943, because it has recently revealed that the railroads' allotment of steel for the third quarter has been reduced 40 per cent from their estimated requirements.

It cannot be presumed that the War Production Board wishes to destroy the adequacy and efficiency of domestic transportation. The only other conclusions available are that its statisticians are slow in catching up with the facts, or that officials entrusted with final decisions are careless or uninformed. How long will the WPB persist in allocations of materials to the railway based on an estimated increase of traffic in 1943 only one-third as large as has thus far actually occurred?

## Proposed Changes In the Patent Law

Patents establish lawful monopolies for seventeen years. They are issued by government to encourage the invention and production of improved or new materials, devices and machinery that promote technological progress. Many inventors and manufacturers have patents that have been in existence less than seventeen years, but production under which has been suspended by government during the war period in order that more use may be made of materials and productive capacity for war purposes. Consequently, a bill has been introduced by Congressman Elston to provide that any owner of a patent who has been unable since December 7, 1941, "to manufacture such invention or discovery . . . due to the war emergency shall . . . be issued a certificate granting an extension of the term of such patent for a period equal to the period during which such inability to manufacture existed."

Thurman Arnold has caused much discussion recently of patents by his attacks on their alleged misuse; and various proposals have been made for "reforming" the patent laws. One thing is certain, however—the granting of patents, and opportunity for their legitimate and profitable use, have promoted and are essential to technological progress. They do create, and are intended to create monopolies; but the monopolies they create usually do not *reduce* but increase competition; for the new product patented must compete with others already on the market, and must be better or cheaper in order to compete successfully with them.

A patent is given for seventeen years on the assumption, based on experience, that that long a period is required adequately to encourage the invention, development and marketing of improved and new products. On that assumption, action by the government that issued a patent which prevents marketing of the product patented during part of the period covered by the patent deprives its owner during that part of the period of his rightful opportunity to make lawful and profitable use of it.

Therefore, the argument for passage of legislation extending patents for such periods as their use may be suspended by the war emergency seems fair and logically unanswerable.

Whether changes in existing laws are needed to prevent misuse of patents is a different question. A committee of the National Association of Manufacturers has, in fact, made eleven recommendations for changes in the laws and in their administration. The sole purpose of government should be furtherance of the public interest; and the sole purpose of government in issuing patents should be furtherance of the public interest by promoting technological progress. To this end it is necessary to provide opportunity for adequate rewards for those who promote progress. It is not promoted, but is usually hindered, by those who buy up patents and do not use them.

The usual purpose in such instances is to minimize competition, whereas every patent issued for a good product should increase competition. Therefore, the law should severely restrict the length of time a patent can remain in existence without being used.

## How to Secure More Effective Supervision

The National Association of Manufacturers has prepared a pamphlet entitled, "The Foreman—The Key Man in Your Plant," which is worthy of most careful consideration and study by all those who are interested in raising the standards of efficient management in an organization. Section II of this pamphlet presents a sort of self-measuring device by which an organization can appraise its adherence to the sound principles of management, so far as supervisory relations are concerned. This Section is broken down into several parts, including recognition of foreman's status, foreman's compensation, authority commensurate with responsibility, personnel practices relating to supervisors, two-way channel of communications, women, and consultative supervisory relations and morale.

Important as are all these factors, the one making the foreman or supervisor a real two-way channel of communications, is worthy of special note. He comes in direct contact with the workers—the men on the firing line. He is in a position to keep management fully informed as to the needs and the feelings of the men in the ranks. He should also keep the men fully informed as to the policies and necessities of management, but to do this he must be far more fully informed than he is in many instances. In a way, this key man is the spark plug who should vitalize relationships between men and management. If full advantage is not taken of him in this capacity, then one of his greatest assets is lost.

Just what is required to make the most of the supervisor or foreman as a mutual interpreter of men and managements? The N.A.M. lists these requirements as





follows: (1) Provisions should be made to bring foremen in contact with top management as often as possible, on both a formal and an informal basis; (2) foremen should be informed promptly by executive management of all important discussions with employee groups and representatives; (3) executive management should seek the observations and suggestions of the foremen upon production, personnel and operating problems (4) foremen should be given notice, as far in advance as possible, of decisions by executive management which affect employment and production problems; (5) as a part of supervisory management, foremen should be kept informed by executive management on such problems as labor relations, taxes, and existing legislation affecting the company, business outlook of the company, and local community relations of the company.

Obviously, these recommendations are as constructive for railroads as for manufacturers.

## Inadequate Yards A Bottleneck to Traffic

Of the many changes that are being demanded in the fixed facilities of the railways to meet the needs of war-time transportation, some of the most important, and growing increasingly important as traffic continues to increase, are in yards. That this is true may seem incredible to those uninitiated who recall the idle yard areas, the weed-overgrown yard tracks, and even the abandoned yard facilities of the depression era. But it is a vivid reality to operating and engineering officers, and one that is causing them serious concern as they see train delays, with hundreds of lost car and locomotive hours, pile up at yards, and through the war-time restrictions on materials find it impossible to remedy at most only the more exaggerated conditions.

The reasons for the present inadequacy of many yards are only too evident to those acquainted with the changed requirements for transportation brought about by the war. The huge increases in traffic alone might well have called for many changes; but far more fundamental has been the shift in the direction of the preponderance of loaded traffic on all transcontinental lines, brought about by the war in the Pacific, plus the equally fundamental changes effected in operating practices generally to secure the utmost efficiency from all available motive power.

Although the traffic of the railways was already rising prior to December 7, 1941, due to the defense activities of the country, most roads still had yard capacity to spare. Immediately after December 7, however, with the surge of military supplies and equipment to the West coast, a surge that has now become a tide, many west-bound yards became completely inadequate over night and still remain inadequate—inadequate in number of tracks, in length of tracks, and in all facilities for the expeditious handling of cars. Supplementing this burden on many westbound facilities brought about by the

reversal of the traffic load, and applying with equal force to numerous other yards handling traffic to the North, East and South, has come the need for an increased number of classifications to serve the hundreds of war plants and military establishments that have sprung up over the country. Adding still further to the burden on many existing facilities has been the steady increase in the length of trains, brought about both by increased traffic and an attempt to utilize all available motive power to its maximum capacity. Ironically enough, at the same time, fundamental changes in the currents of traffic and in operating practices, brought about by the war, find other yards completely misplaced as regards current needs.

In spite of serious restrictions upon many of the materials essential to yard extensions and improvements, a few of the most aggravated yard conditions have been remedied, saving thousands of car-days and hundreds of locomotive-hours monthly, not only at these yard points, but at many other points dependent upon them. Several other important yard projects are under way at the present time, which, when completed, will have an equally important effect in expediting traffic. However, equally serious conditions continue to prevail at many other points, which cannot continue without telling effect on the war effort—conditions that must be remedied to break existing bottlenecks.

That these bottlenecks be eliminated to the greatest extent possible is the joint responsibility of the railways and the War Production Board; the railways to initiate remedial measures, and the WPB to make it possible for them to secure the necessary materials to carry them out. That each meets its share of this responsibility is vital to effective action, and railway officers must not forget that they must take the initiative in each case—must create and develop the remedy, must prepare and propose the plan, and must urge the release of the materials necessary to carry it out. Until then, and only until then, in spite of the added burden which this is certain to entail, they have not discharged their obligation. On the other hand, when this has been done, the WPB must do its part or accept the full responsibility for the consequences.

### Ancient History?

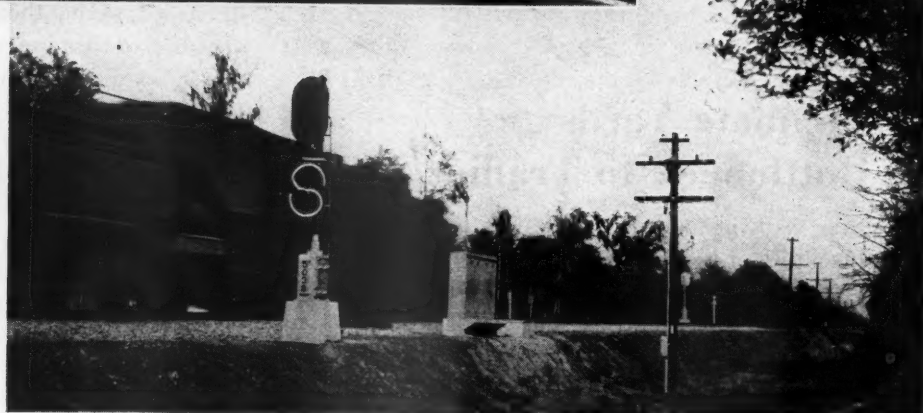
It has often been found that profuse expenditure, heavy taxation, absurd commercial restrictions, corrupt tribunals, disastrous wars, seditions, persecutions, conflagrations, inundations, have not been able to destroy capital so fast as the exertions of private citizens have been able to create it.

Every man has felt entire confidence that the state would protect him in the possession of what had been earned by his diligence and hoarded by his self-denial.

—Lord Macaulay, the Historian, Writing in the 1850's



*Above—The C. T. C. Control Machine in the Dispatcher's Office. Right—The Distinctive Seaboard Track Signal*



## Seaboard Installs 64 Miles of Centralized Traffic Control

**Reduces average running time of freight trains one hour—New carrier apparatus facilitates line coding controls and indications**

**A**S A MEANS for increasing track capacity and reducing train time, the Seaboard has installed centralized traffic control on 64.6 miles of single-track main line south from Savannah, Ga., to Thalmann. North from Savannah to Hamlet, N. C., the Seaboard has two lines, the one via Charleston, S. C., being used primarily for freight service, and the other line via Columbia, S. C., for passenger service. From Gross, Fla., 107 miles south of Savannah, alternate lines are available through Jacksonville, Fla., and direct to various points in Florida. The result is that the section of single track between Savannah and Gross is a bottleneck. The daily traffic on this territory includes 12 scheduled passenger trains and 4 or more extra sections, as well as 20 to 24 freight trains. Thus the total number of trains ranges from about 32 to as many as 40 or more daily. An additional complication is that numerous meets are scheduled in this territory.

A large part of the line between Savannah and Thalmann extends through wooded swamps or low land, with the track on a fill about 12 to 15 ft. above water level. For short sections approaching low ridges, the grade ranges up to 0.5 per cent, but for practical purposes, the line may be said to be level. For extended sections, the line is tangent, one tangent being 28 miles long. There are few curves, and the maximum curvature is about two degrees. The rail throughout is of 100-lb. section, with tie plates, good ties and rock ballast, all well maintained.

The maximum authorized speed for passenger trains operated by Diesel-electric locomotives is 75 m. p. h.; for passenger trains hauled by steam locomotives, 70 m. p. h., and for freight trains, 50 m. p. h. Speed restrictions are in effect at railroad crossings and at one drawbridge.

Automatic block signaling has been in service in this



territory since 1927, with train movements authorized by time table and train orders. As traffic increased during the early months of 1942, the trains lost much time when meeting and passing under train order operation, and at sidings equipped with hand-throw switches. To increase the track capacity and reduce delays, the logical expedient was to install centralized traffic control, including power switch machines and semi-automatic signals to authorize train movements, thereby superseding train orders. The number of trains operated is the same throughout the Savannah-Gross territory, but at present more meets and passes are made in the section between Savannah and Thalmann; therefore this 64.6 mile section was equipped with C. T. C. first.

### Three Passing Tracks Removed

Passenger trains of the Seaboard use the tracks of the Savannah Union Station Company for 1.8 miles between the passenger terminal and Florida Junction, at which point an electric interlocking protects a crossing with the Station Company, as well as including a junction switch between the Seaboard and the Station Company tracks. At Blossom, 1.3 miles south of Florida Junction, there is a junction switch with a cut-off which is used by certain trains.

Knowing from past experience that C. T. C. would permit trains to get over the territory more quickly and thus reduce the number of passes and meets, three passing tracks, at Ford, Pineland and Anderson, were removed.

This left 14 passing tracks between Florida Junction and Thalmann, the locations and car capacities of which are shown on the accompanying diagram.

At Everett, a crossing with the Southern is protected by an electro-mechanical interlocking which also includes the operation of the south switch of the southward siding and the north switch of the northward siding. Also at Burroughs, a crossing with the Atlantic Coast Line is protected by an electro-mechanical interlocking which

includes the control of the south switch of the passing siding at this point. Except for these switches, all passing track switches between Florida Junction and Thalmann were equipped with electric switch machines as a part of the new C. T. C. project. Also as a part of the C. T. C., electric switch machines were installed at the junction switch at Blossom and at the north switch at the end of the southward passing track at Thalmann. Two switches near the crossing at Thalmann are oper-



A Power Switch on the New Seaboard Installation

ated by hand-throw stands handled by the operator, while the south switch of the northward passing track is operated by a power machine which is controlled by the operator.

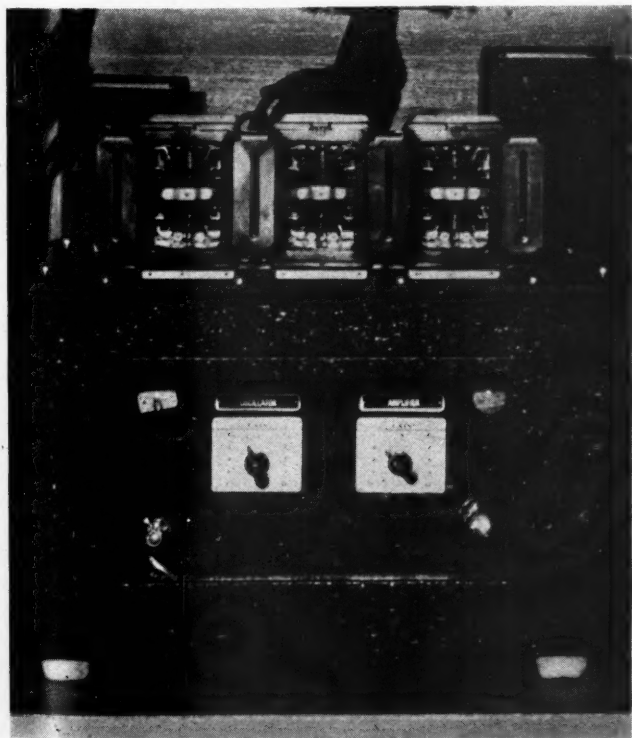
### Signaling Arrangements

In the previous automatic signaling, a double location of head blocks was placed about 50 ft. from each passing track switch. In order to increase the speed of trains when entering or departing from passing tracks, the old No. 10 turnouts were replaced with new No. 16 turnouts. When installing the longer turnouts, the switches were moved, thus requiring that the station-entering headblock signals be moved, and a two-aspect color-light "arm" was added for directing trains to enter the passing track. A special feature of the Seaboard signaling is the painting of the letter "S" in white on the face of the background shield on each of these lower "arms."

This letter conveys definite information to an engineman that a yellow aspect in this "arm" under a red in the upper "arm" indicates that the power switch is reversed to permit the train to enter the passing track.

As a part of the C. T. C. project, a track circuit was installed on each passing track to indicate to the dispatcher when the siding is occupied, and the controls are arranged so that the red-over-yellow aspect is displayed when the passing track is either occupied or unoccupied. The passing tracks, in most instances, are long enough and located in such a manner that the speed need not be reduced below 25 m. p. h. until after most of the train is on the passing track. Thus these features save considerable train time when entering and leaving passing tracks.

The main line station-departure signals were moved to new locations opposite the fouling points on the passing tracks. For the most part, this line extends through swamps, the tracks being on a fill. The expense of widening the fill to permit throwing the passing track to provide clearance for a main line station-departure signal did not seem to be justified. Steel to construct cantilever signal bridges was not available. For these reasons, at one end of each passing track, the main line



Part of the Coded Carrier Equipment

station departure signal is on a bracket mast at the field side of the passing track, a doll mast being provided to show that the signal applies to the main track. New three-aspect color light dwarfs were added as leave-siding signals.

The intermediate signals were relocated as required to provide adequate spacing in accordance with the braking distances of modern trains and speeds. On account of the swampy nature of the soil, large deep concrete signal foundations, poured in place, were required, and in some instances, it was necessary to drive a pile and pour the foundation on top of the pile. The old foundations were discarded by digging holes and toppling the foundations into the holes to bury them.

### Benefits of the C. T. C.

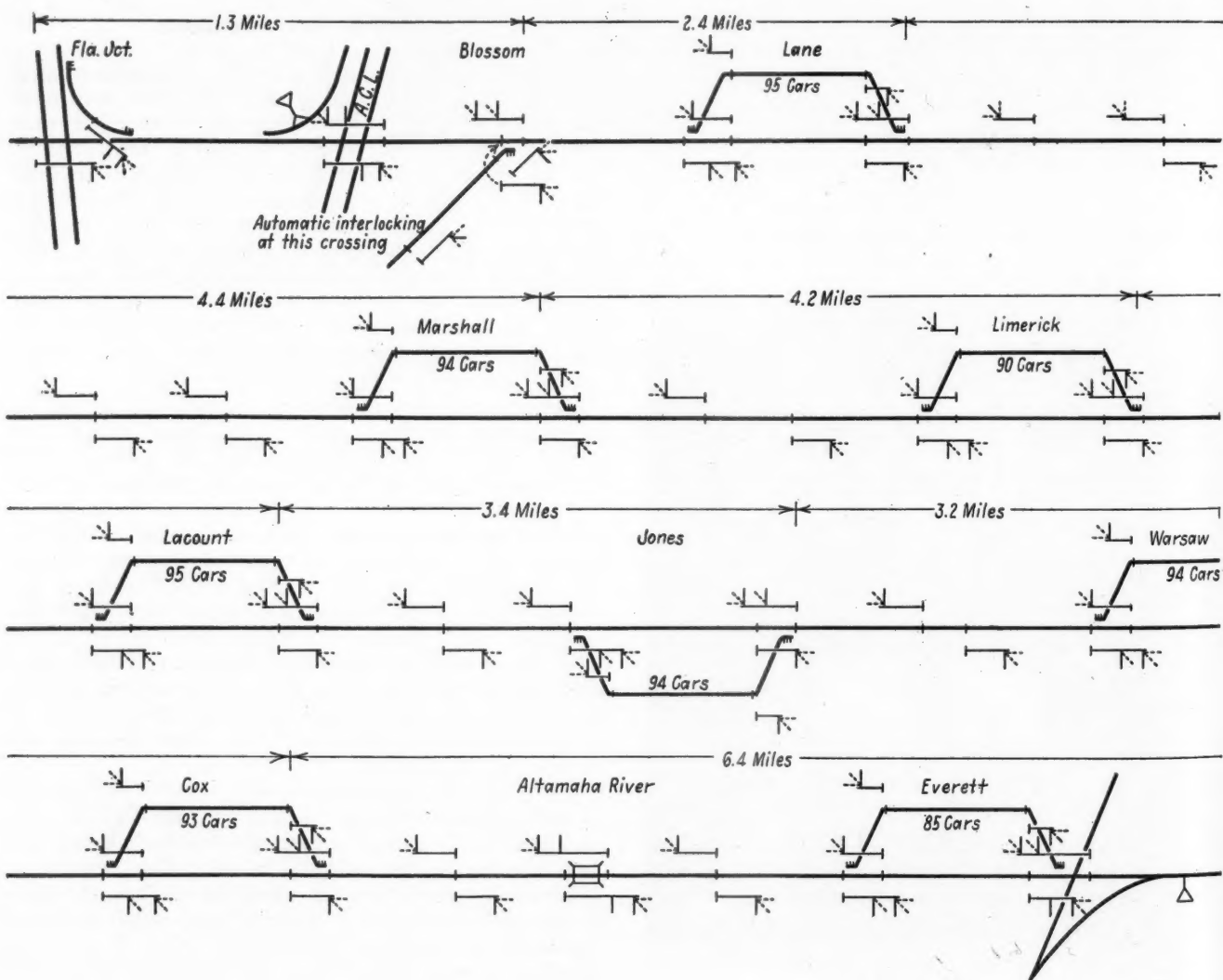
The principal benefit of the C. T. C. has been to get trains over this territory in less time without increasing the maximum permissible speeds. Under the previous operation with train orders, the speed of trains had to be reduced when approaching and passing train order offices, not only to permit the enginemen to see the aspects displayed by the train order signals, but also to permit train orders to be handed up to trainmen. Analysis shows that trains save an average of about 10 to 12 minutes on the 64 mile C. T. C. territory, due to the elimination of these speed reductions and some stops previously required at train order offices. This saving

applies to passenger trains as well as to freight trains.

Previously when the switches were operated by hand-throw stands, trains had to be stopped to permit throwing the switches before entering a passing track, as well as after leaving. With the new power switches, trains can pull into passing tracks at 25 m. p. h. without stopping. Likewise when leaving, trains can accelerate to 25 m. p. h. and pull out without stopping. This saving in time amounts to 12 to 15 minutes for a train departing from one passing track, moving over a section of main line and entering another passing track. Often this saving permits a train to be advanced one or more stations when otherwise it would have been held.

Under the previous method of operation, train orders had to be issued and delivered an hour or more prior to the time meets or passes were to be made at certain stations. In the meantime, if some train did not make the time anticipated by the dispatcher, there was no means for changing orders to advance trains which were waiting. By means of the information on the C. T. C. control machine, the dispatcher now knows the locations of and the progress being made by each train, and he can, therefore, advance trains for close meets or passes.

For example, on a recent day, the dispatcher anticipated that he would put a northbound perishable freight train in the passing track at Cox to let a following passenger train pass. However, the passenger train lost time, and the freight train was directed to keep moving all the way to Richmond Hill, where it took siding to



Track and Signal Plan of the Centralized



let the passenger train by. Thus the freight was advanced about 40 miles further under C. T. C. operation than would have been possible with train orders. Train movements of this character are in progress practically all the time. In some instances, as many as 16 trains are kept moving on the 64-mile territory. The road foreman of engines and the dispatchers report that the freight trains are now covering the 64 miles in an average of one hour less time than previously.

The arrival of these locomotives at their terminals an hour earlier permits them to be made available for the next road trip that much sooner, which has been a decided help in relieving a shortage of power. Previous studies by the road foreman of engines show that approximately 20 per cent of the fuel and water was consumed while trains were standing on passing tracks. As the C. T. C. territory is now being operated, the trains lose very little time on passing tracks, the total average saving of one hour being 20 per cent of the total involved in this mileage. Likewise, tests have proved that the elimination of a stop will save from 1,000 to 1,500 lb. of coal for a tonnage freight train and 500 to 700 lb. for a passenger train, as compared with running through at authorized speed. The C. T. C., with the power switches, is saving many such train stops daily on this territory, and although no means are available for measuring the saving in fuel, it is obvious that a considerable amount of fuel is being saved. Furthermore, in some instances, freight trains pass up water stops

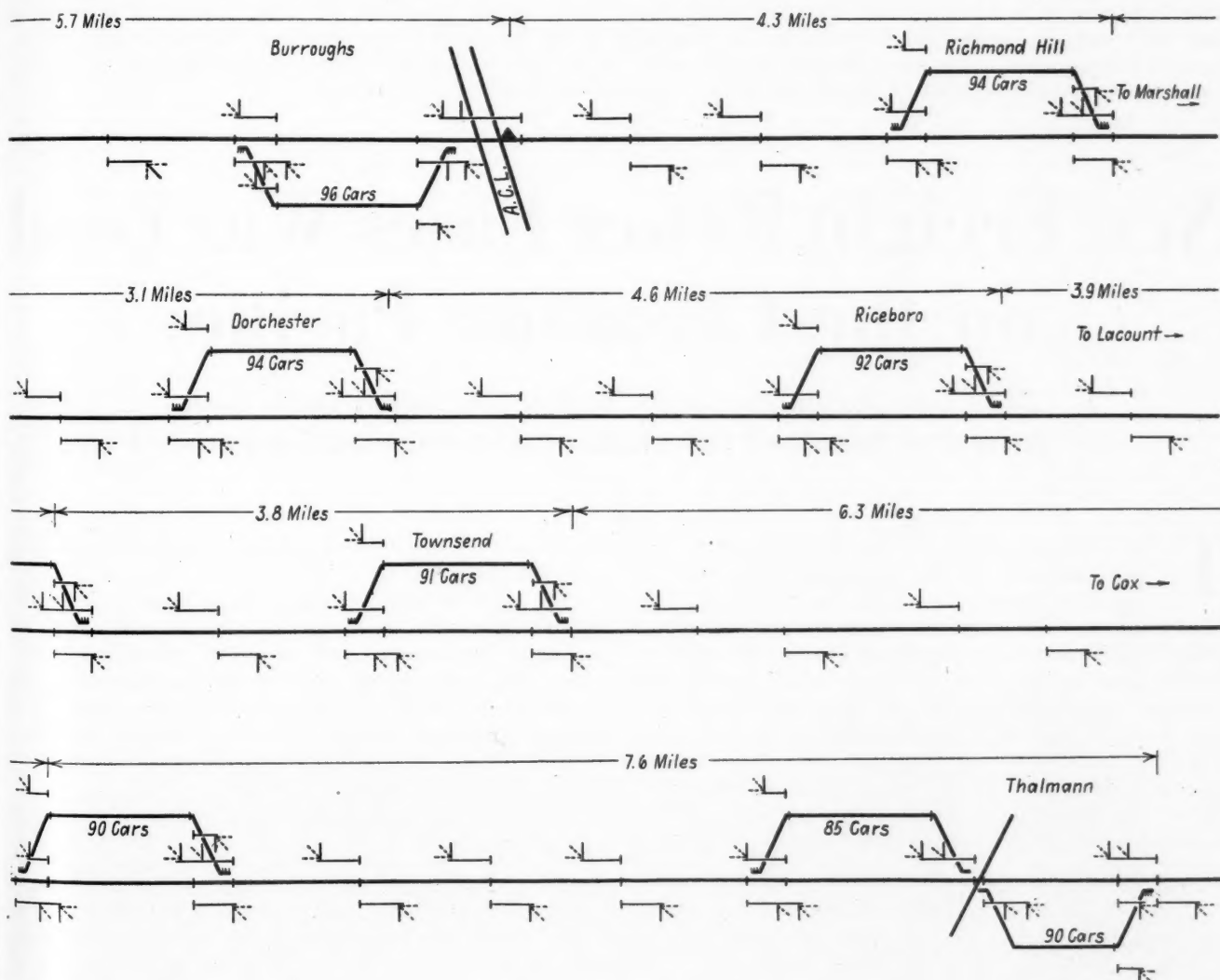
that otherwise would be required, which in each case saves at least 10 minutes time.

### Coded Carrier for C. T. C. Line

The C. T. C. control machine is located in the dispatcher's office in the Union Station in Savannah. The controls are sent to the field stations and indications are returned by means of the Union Switch & Signal Company's multiple time code system, multiple line application, using a pair of No. 8 bare copper line wires from Savannah to the south end of the territory. The new and interesting feature of this project is the use of coded carrier current for handling the coded controls to and indications from the field stations on the half of the territory remote from the office.

On the 39 miles between the control office at Savannah and the south switch at Jones, the control of switches and semi-automatic signals at the 19 field stations, as well as the return of indications, is handled by ordinary d-c. code impulses, the same as on numerous previous C. T. C. projects. This system is complete within itself, separate code sending and receiving apparatus being used in the Savannah office.

The control of switches and semi-automatic signals at 11 field stations, as well as the return of indications, on 20 miles from Jones south to Thalmann is handled by a different line coding system which includes separate code-sending and receiving equipment in the Sa-



Traffic Control Territory



vannah office. This second system utilizes codes at high frequencies which are super-imposed on and transmitted direct in one direction or the other between Savannah and Jones on the same pair of line wires which are used also by the conventional d-c. line codes to and from the field stations in the Savannah-Jones territory. At these field stations and at Savannah, special devices, known as filters, prevent interference between the conventional d-c. codes and the high frequency codes and, therefore, controls to or indications from any of the field stations in the Savannah-Jones section can be handled simultaneously with controls to or indications from any of the field stations in the Jones-Thalman section. In addition, the filters permit the same pair of line wires to be used also as a telephone circuit.

The advantages of this carrier system are numerous. On this busy railroad, the dispatcher in charge of the control machine can send out controls to widely separated field stations at exactly the same time, and when meets or passes are being made at close timing, a few seconds delay may avoid the stopping of a train. Furthermore, the dispatcher's work is based on the information given by indications on his machine and, therefore, it is just as important that indication codes come in promptly as it is that the controls go out promptly. The carrier saves an enormous amount of copper that would be necessary to provide an additional circuit.

A 16-step control code cycle goes out in about 4 seconds; a 16 step indication code cycle comes in in the same length of time, but only one control or indication code cycle can be handled at one time by the conventional d-c. time code system on the pair of line wires. Experience shows that when trains are numerous, some

delays may result if more than 30 to 35 field stations are controlled as one unit. By means of the carrier system, an extended territory is cut into sections, with about 20 field stations in each section; for example, there are 19 field stations in the Savannah-Jones section. At present there are only 11 field stations in the Jones-Thalman section, but as the C. T. C. is extended southward, more field stations will be added to this section to make a total of 20 to 25; then a second carrier section will include the succeeding 20 or more field stations. Thus, in the total distance of 107 miles between Savannah and Gross, there will be the conventional d-c. code section between Savannah and Jones, then the first carrier section between Jones and probably White Oak, and a second carrier section between that point and Gross.

The pair of line wires from Savannah end at Jones, there being no physical connection between these wires and the pair that extends south from Jones to Thalman, except for a band pass filter which passes voice frequencies in order to allow the telephone system to extend from Savannah to Thalman. So far as the normal operation of the system is concerned, it is the same as if a separate pair of line wires extended from the office through each of the sections of C. T. C. territory. Thus the use of carrier frequencies reduces greatly the requirements for copper line wire.

This change-over from automatic block to centralized traffic control was planned and constructed by signal forces of the Seaboard Air Line, under the direction of J. R. DePriest, superintendent telegraph and signals, the signaling equipment being furnished by the Union Switch & Signal Company.

# New Freight Power Eases War Load on the Canadian Pacific

**2-8-2 type locomotives have high-tensile boiler shells built from steel furnished in Canada—Light reciprocating parts**

**T**WENTY locomotives of the 2-8-2 type are now being delivered to the Canadian Pacific by the Canadian Locomotive Company, Kingston, Ont. The locomotives are being built under wartime regulations which have frozen locomotive designs for the duration and are the first, so far as is known, in which considerable Canadian-manufactured boiler-shell plate and tender-tank plate have been used. These materials previously came from the United States and England. Half of the locomotives are being delivered to the eastern lines and half to the western lines of the railroad. They have been counter-balanced with a view to their use for heavy passenger service when needed and are all equipped with steam-heat and air-signal apparatus.

The locomotives carry a boiler pressure of 275 lb. With 22-in. by 32-in. cylinders and 63-in. driving wheels they develop a tractive force of 57,500 lb. The total weight of the locomotive in working order is 339,000 lb. They are designed for high-speed service with heavy

loads and will operate on long runs over several divisions without change.

The boiler is built without a steam dome. The boiler barrel sheets, and the inside and outside welt strips, are made of high-tensile steel to C.P.R. specification 131. All of this steel, except that for the second course, was furnished by the Steel Company of Canada. The second course, being too wide for rolling in Canadian mills, was obtained from the Carnegie-Illinois Steel Corporation.

## Types of Steel Used

The front tube sheet, outside throat sheet, wrapper sheet, wrapper-sheet liner, and back head are of boiler steel. Firebox crown, sides, door sheet, back tube sheet and inside throat sheet are firebox steel. Both the boiler and firebox steels are to C.P.R. specification 5-N. Where size would permit, the steel for these sheets was also furnished by the Steel Company of Canada. The physical



properties of these steels are shown in one of the tables. The locomotives are fired by the Standard Type H stoker. Each locomotive is equipped with an Elesco type K-40-K feedwater heater and a Hancock type 2W-5000 inspirator. Among the cab fittings are the water columns of the railroad's own design in which the gage cocks are mounted on the column instead of directly in the boiler back head.

### Cast-Steel Bar Frames

The locomotives are built up on cast-steel bar frames with bolted cross-ties. Both front and intermediate driving wheels are fitted with the Alco lateral motion device.

### General Dimensions and Weights of the Canadian Pacific 2-8-2 Type Locomotives

Railroad	Canadian Pacific
Builder	Canadian Locomotive Co.
Type of locomotive	2-8-2
Road class	P2h
Road numbers	5417-5436
Date built	1943
Service	Freight or passenger
Rated tractive force, engine, 85 per cent, lb.	57,500
Height to top of stack, ft.-in.	15-6 3/4
Width overall, in.	10-8
Cylinder centers, in.	7-7
Weights in working order, lb.:	
On drivers	Weight distribution not yet available
On front truck	
On trailing truck	
Total engine	
Tender	238,000
Wheel bases, ft.-in.:	
Driving	16-6
Engine, total	35-11
Engine and tender, total	76-9
Driving wheels, diameter outside tires, in.	63
Cylinder, number, diameter and stroke, in.	2-22 x 32
Valve gear, type	Walschaert
Valves, piston type, size, in.	12
Maximum travel, in.	7
Boiler:	275
Steam pressure, lb.	78 1/2
Diameter first ring, inside, in.	120-3 1/16
Firebox length, in.	84 3/4
Firebox width, in.	27
Combustion chamber length, in.	4-3 1/2 O. D.
Arch tubes, number and diameter, in.	32-2
Tubes, number and diameter, in.	158-2 1/4
Flues, number and diameter, in.	45-5 1/2
Length over tube sheets, ft.-in.	18-0
Superheater, type	A
Stoker, type	Standard H
Feedwater heater, type	Elesco K-40-K
Grate area, sq. ft.	70.3
Heating surfaces, sq. ft.:	
Firebox	274
Arch tubes	36
Firebox, total	310
Tubes and flues	3,126
Evaporative, total	3,436
Superheater	970
Combined evap. and superheater	4,406
Tender:	
Type	Rectangular
Water capacity, Imp. gal.	10,000
Fuel capacity, tons	18
Trucks	4-wheel

A McAvity flange lubricator feeds oil to the flanges of the leading driving tires.

Steel wheels and tires, which formerly came from England, were secured in the United States. The tires for the engine-truck wheels, trailing-truck wheels, and the main driving wheels were furnished by the American Locomotive Company, Railway Steel Spring Division, and the rolled-steel tender wheels came from the Carnegie-Illinois Steel Corporation. The tires are manufactured to A.S.T.M. Specification A-26-39 Class B and the wheels to the A.A.R. Specification M-123-42, Class C.

The main piston heads are Z-type of cast steel and are equipped with Hunt-Spiller all-bronze lipped type piston rings. King packing is applied on the piston rods. Valve-

### Physical Properties of the Steels Used in the Canadian Pacific 2-8-2 Type Locomotives

	Tensile strength, lb.	Yield point, lb.	Elongation in 8 in., per cent
High-tensile boiler-shell steel			
Specification No. 131	70,000 to 83,000	38,000 min.	1,600,000 tensile
Boiler-shell steel			
Specification No. 5	55,000 to 65,000	0.5 of tensile	1,500,000 tensile
Boiler firebox steel			
Specification No. 5	48,000 to 58,000	0.5 of tensile	1,500,000 tensile

chamber and cylinder bushings are of cast iron of the railroad's own specification.

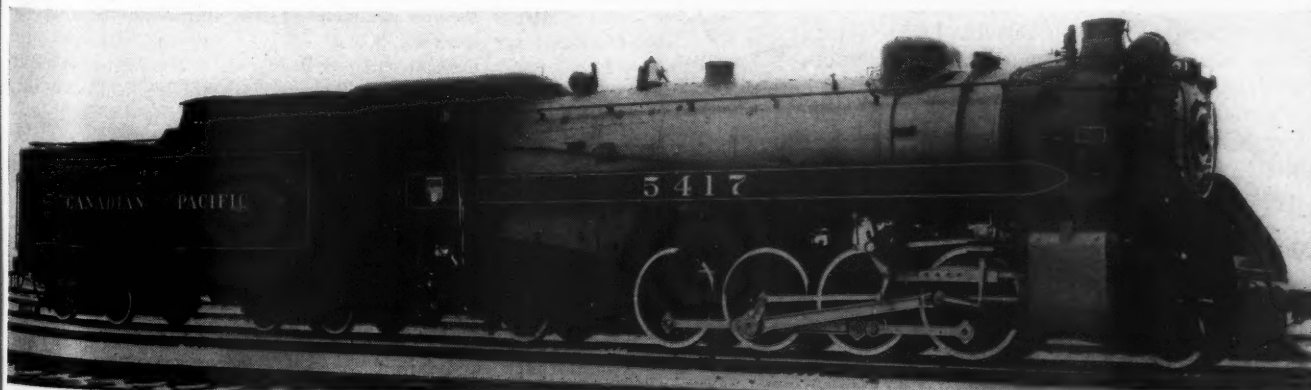
The total weight of reciprocating parts on each side of the locomotive is 1,170 lb. An overbalance of 35 lb. is applied in each main wheel. The overbalance in each of the other wheels is 223 lb.

### Throttle, Superheater and Valve Mechanism

The boilers include Type A superheaters with the American multiple throttle in the superheater header. The outside throttle operating rod is enclosed in the hand rail alongside the boiler. The steam-distribution system starts with the internal steam-collecting drypipe developed some years ago by the Canadian Pacific. The locomotives have Walschaert valve motion controlled by the railroad's standard screw type reverse gear operated by an air motor.

The air-brake equipment is Westinghouse No. 8ET and includes one 8 1/2-in. Westinghouse air compressor. Other special equipment is shown in the table.

The tenders are the rectangular type of riveted-plate construction. They have a water capacity of 10,000 Imperial gallons and a coal capacity of 18 tons.



# Tie Producers Discuss War Problems

**Scarcity and inefficiency of labor, less production, price regulation and grading, receive attention**

**M**ORE than 75 executives and other representatives of tie-producing companies and railway officers interested in the production, procurement and use of cross and switch ties attended the twenty-fifth annual meeting of the Railway Tie Association at the Hotel Statler, St. Louis, Mo., on May 4. Owing to conditions arising from the war, the meeting was confined to a single day, but during the two sessions the reports and discussions reflected the concern of the industry with respect to the labor situation, the shortage of transport, the ramifications of price regulation and the competition of high wages paid in war industries, and their effect on the volume of production and the quality of ties. Both sessions were presided over by the president, David W. Bauer, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo.

The meeting devoted its entire time available to the problems affecting tie production as a result of the impact of war conditions, including reports on Manufacturing Practices, on Mechanical Equipment in the Production of Crossties, on Timber Conservation, on the Effect of Revised MPR-216 on the Crosstie Industry, on Legislative developments and on the Checking and Splitting of Ties. In addition, timely contributions were made by A. A. Miller, chief engineer, maintenance of way and structures, Missouri Pacific, St. Louis, Mo., who spoke at the annual luncheon on The Railways and the War Effort; and by Carleton S. Hadley, general counsel, Wabash, St. Louis, Mo., who addressed the group on the Railways and the War Agencies at its annual dinner.

The secretary reported that the membership included 33 corporate members (the producing companies), an increase of 6, and 43 associate (individual) members.

## New Officers

At the afternoon session, the following officers were elected for the ensuing year: President, R. M. Claytor, plant manager, Southern Wood Preserving Company, Chattanooga, Tenn.; first vice-president, R. M. Hamilton, vice-president, T. J. Moss Tie Company, St. Louis, Mo.; second vice-president, E. J. McGehee, vice-president, Wood Preserving division, Koppers Company, Pittsburgh, Pa.; members of the Executive committee—R. Van Metre, president, Wyoming Tie & Timber Company, Chicago; John F. Renfro, secretary, Taylor-Colquitt Company, Spartanburg, S. C.; T. J. Turley, vice-president, Bond Brothers, Inc., Louisville, Ky.; and A. E. Whitehurst, general manager, American Creosote Works, Jackson, Tenn. At a meeting of the officers following the conclusion of the convention, Roy M. Edmonds was re-elected secretary-treasurer for another year.

President David W. Bauer expressed the attitude of the association and of its members individually in his

**Shortages of Man-Power, Heavy Demands for Ties, and Lack of Adequate Transport from Woods to Yard, Are Complicating the Production of Ties in Areas of the Country**



opening address, when he said that while this was the silver anniversary meeting and that it was being held at the place of the association's birth, it was not a fitting time to celebrate the anniversary since "we are now confronted with the solemn task of winning the war and, obviously, it is our responsibility to do everything within our power to accomplish this as quickly as possible and regardless of sacrifices."

Continuing, he said:

"Upon reviewing statistics of crosstie production and requirements during the past year, we may feel that we have made a substantial contribution to the war effort. The average annual consumption of crossties during the 10 years prior to 1942 was approximately 47,000,000, while more than 65,000,000 ties were used during 1942. This increase was required largely by the ordnance department and for naval and military projects. It should be noted, however, that while there was an apparent increase in production during 1942, it was by no means sufficient to meet the increased demand, so that the larger part of this increased demand was met from stocks on hand, and this is reflected in the current inventory figures.

"In meeting this increased demand, our industry was faced with many problems, most of which we have yet to overcome and some of which threaten to become more acute before improvement can be expected, particularly the shortage of hauling equipment and rubber and, most of all, the man-power shortage. Such statistics as are available at this time disclose that the production for the first quarter of 1943 was approximately ten per cent under the same period last year, but we must consider it our obligation to satisfy the needs of the railroads so that they may keep 'em rolling to victory."

## Railroads' Essential Job in War

Mr. Miller in his address emphasized the difference between the transportation problem in this war, as compared to the previous one. He said in part:

"The difficulties that were experienced in the first world war were caused largely by a concentration of traffic at a few Atlantic ports, and failure to co-ordinate the loading and shipment of cars from the interior with the possibilities of unloading



at the seaboard. Many cars arrived before there were ships ready for their lading and, instead of unloading the cars and storing their contents, so that they could be returned for further loading, they were held as storehouses. The result was a serious blockade on those roads close to the Atlantic, and a serious nation-wide car shortage because of the large number of cars used as storehouses.

"In the present war, the needs for transportation are much greater and movements, instead of being directed towards one coast only, are in every direction. However, partly because of lessons learned in the first world war, but largely because of the far higher efficiency of our present-day operation, a far greater transportation task is being performed, with almost no real difficulty, outside of inconveniences largely connected with civilian passenger travel.

"Many people had thought that the newer forms of transportation, the airplane and the modern super-highway, would not only be able to care for the logistics of this war, but even that the railways were on the way out as an outmoded agency, just as the canal boat and the river steamboat were rendered obsolete by better forms of transportation. Hitler made this same mistake. Prior to beginning his series of aggressions, he built up a magnificent system of super-highways designed for military use. At the same time he neglected his railroads; they were not fully maintained; their operating methods had not been kept up to date. When the war came, the first rush was handled by the super-highways, but after the supply lines became more extended, the unprepared railways were called upon more and more. We all know the result.

"That the importance of the railways, particularly for large volume, long distance movements, is fully appreciated by our forces and our allies is shown clearly by the concentration of bombing effort against Hitler's trains, shops, yards, railway bridges and junctions. It is significant, too, that when our forces landed in North Africa, they took with them not only tanks, trucks and jeeps, but also locomotives, cars, rails, other track materials, and trained railroad personnel, so that supplies for the army in Tunis, moving 1,000 miles from Casablanca, would not be too few or too late.

"Perhaps I might call attention here to one fact which has been overlooked by those who have thought railroads are unessential. An average freight train today hauls around 3,000 tons. The largest trains haul as many as 10,000 tons. Assume that this freight were to be hauled by the largest trucks; that each truck hauled 10 tons. Thus, 300 trucks and their drivers would be required merely to haul the freight of one ordinary train. Multiply this by the literally thousands of freight trains that are always in motion throughout the nation and one obtains some idea of how essential the railways are.

### Why Track Is Better

"How have the railways been able to handle the war load so suddenly thrust upon them? In the first place, tracks are stronger and more dependable than ever before. Poor subgrade conditions have been remedied, not by the old but hopeless method of merely dumping on more cinders, but for years the causes of unstable roadbed have been sought and cured instead of merely treating the symptoms. Furthermore, there has been a great improvement in the most important matter of cross-ties. In this connection there is a miracle to record—we used to be told, when we attempted to get reasonably sound and straight ties, that the trees did not grow that way. Now, strange to say, the trees grow very much better, and even our purchasing agents know that a spot of decay in a tie can never be improved, even though it may be obscured with creosote.

"But an important reason for the railroad ability to deliver is the greatly improved operating practices. These are too numerous and varied to more than mention. They include higher speeds, longer runs, heavier loading of individual cars, reduction of terminal delays and far better co-operation with our shippers. For example, higher average speeds are the result, not only of greatly increased speeds while trains are actually moving, in turn made possible by better ties, rails, track, etc., but also because of the large reduction in train delays by better methods of dispatching, better signals and

so on. Formerly a measure often used to gage operating efficiency was the number of tons handled per train, the more the better. Now it is recognized that the factor of time must also be included, with respect to both the cost of moving the traffic and the value to the patron, so instead of more 'tons per train' we have 'ton-miles per train hour' as one of our yardsticks.

"Just a word or two as to the magnitude of the task. If last year's freight traffic were handled in one train, at 60 miles per hour, this train would have taken more than 305 days to pass a given point. Also, at present, a troop movement leaves some camp somewhere in the United States on the average of every six minutes, 24 hours a day, seven days a week. And this war traffic is superimposed on a greatly increased civilian traffic. This may help us to understand why we can not always provide seats on all trains for everybody. We are not able to buy more cars or locomotives or run additional trains, even if we had the cars, so we are doing the best we can to help win the war with what we have, and in so doing we have had the most wonderful and heartening co-operation from our patrons and the public."

### Changes in Manufacturing Practices

A committee on Changes in Manufacturing Practice noted during the past twelve months, of which W. J. Chambiss, Bond Brothers, Inc., was chairman, reported under four heads. The first dealt with the necessity for operating sawmill and logging crews with less than normal labor. The committee stated that in normal times the ideal tie operation consists of a portable sawmill with a crew of nine men, including 1 sawyer, 1 block-setter, 1 edgerman, 3 off-bearers, 1 tie barker, who also helps load trucks, and 1 handyman, who is used at various jobs where needed. The logging operation employs a truck and driver, 2 snake teams with drivers, 1 single horse with driver to load truck and snake small logs when not loading, and 1 man to cut roads. The timber-cutting crew consists of 9 men running four cross cut saws and 1 foreman to keep saws filed. This full tie crew of 24 men will manufacture from 200 to 250 ties in an eight-hour day, in addition to approximately 4,000 ft. b. m. of side lumber.

The skeleton crew which is being used quite generally today consists of five to six men at the mill, three men logging and five to seven men cutting timber. This crew of 13 to 16 men will manufacture 100 to 125 ties and approximately 2,000 ft. b. m. of lumber in a day. In other words, with practically the same equipment, the same overhead and 60 per cent of the labor cost, one can get only 50 per cent production.

The operator who can get together a crew of only 6 to 10 men is forced to run his mill part time and use the same crew to cut and log. On the average, his production will run from 50 to 75 ties a day. Shortage of manpower is, therefore, the chief cause for limited production, and this condition is becoming more critical month by month. Another change is the quality of labor at the mills. It is now necessary to use inexperienced men, those physically handicapped and older men, thus causing decreased production.

There has been a decided increase in manufacturing costs during the last year, amounting to approximately 40 to 60 per cent, depending on the locality. It has been more difficult to hold up the grade of ties sawn at the mills, chiefly because of inefficient labor. If present production is to continue, we must in some way get it over to the local draft boards that at least the key men at the sawmills must be deferred from military service.

Changes in manufacturing practice involve chiefly changes from sawn to hewn ties in the case of pine; from hewn to sawn ties in the case of gum and oak; and a marked change-over from large to small operators,

especially in the case of pine ties. These changes have been occasioned by increased lumber prices, by War Production Board regulations and restrictions and by manpower problems resulting from the war effort. The tendency of these factors to reduce tie production and the immense turn-over in tie-producing labor have resulted in a let-down in workmanship. This has caused a corresponding let-down in inspection to secure more of the needed ties.

### Difficulties in Timber Conservation

Looking upon any attempt to discuss timber conservation from a practical operating standpoint as inopportune at this time, the Committee on Timber Conservation, of which Meyer Levy, T. J. Moss Tie Company, was chairman, said that the principal difficulty lay in the fact that, owing to conditions confronting the industry, it is compelled to rely in large part on unskilled and inexperienced labor, with wasteful results from: First. Split and burst trees by improper felling; second. Waste of timber because logs are cut too short; third. Improper felling of trees, which results in the larger trees destroying some of the small, young, growing timber; fourth. Tie cuts left in tops of trees by inexperienced cutters; and fifth. The cutting of stumps too high.

The report added that these conditions exist also in the logging operations of forest product industries other than the tie industry.

We are told by the War Production Board that the total minimum lumber requirements for all purposes during 1943 are estimated currently at 31½ billion board feet. The principal lumber problem is that of meeting the greatly increased box and crating-lumber demands. In addition to the lumber requirements, railway requirements for crossties and other forest products which are being substituted for steel, are creating a drain on our timber supply.

However, owing to the emergency demand for forest products, the users of these forest products have shown foresight in accepting types of timber which normally are not in demand, particularly the mixed hardwood types. This will reduce materially the depletion of timber that we normally recognize as most desirable.

Because of this heavy drain on our forest resources there is need, now more than ever before, for timber conservation, so that the requirements of the future may be supplied satisfactorily. There must be intelligent forest management, adequate fire protection and economic cutting and utilization of our forest products, all of which are difficult of accomplishment because of the serious shortage of experienced labor and the tremendous demand for our product.

The tie industry has a definite responsibility in the protection and maintenance of our forests, so that there will be a continuous flow of crossties and other forest products. We should, therefore, make every effort to practice conservation and to spread knowledge on the subject to smaller operators.

### "Liquidating the Capital" of Our Forests

Paul D. Kelleter, supervisor of Clark National Forest, dwelt upon the dangers of forest depletion in his address. He said in part:

"Today, we are meeting within the boundaries of the central hardwood region—a region of great importance to the members of this association. Within this region the annual drain from the timberlands amounts to 1,781,000,000 board feet, with an

estimated annual growth of but 424,000,000 board feet. This gross drain is supplemented by loss from fire, insects and disease amounting to an additional 11,000,000 board feet per year. Thus, the net effect is liquidation of the forest capital, since the annual drain is nearly 4½ times the growth. The effects are far-reaching, as viewed from a social and economic standpoint. They are certainly not conducive to the financial health of this vast area.

"Our problem, therefore, is that of developing a stabilized forest economy. This is of particular importance to the producer and operator. By a stabilized forest economy is meant one that will fit into the general economic scheme and pay its way. Since forestry is a long-time investment, some definite plan for forest land use must be developed. A plan looking toward a stabilized forest economy must, first of all, be based on an accurate forest survey. We must know more accurately than we do at present, the full extent of existing forest resources. We must build up a positive assurance that no owner, whether private, federal or state will deplete the woods and the soil in his handling of the land resources that are involved. On the basis of past experience there seems to be available but two methods: Education and regulation, each by itself, or in combined effort. A long-time program of this sort would more or less shape itself along these lines:

"Protection of the plant against the dangers of fire and the resultant losses must receive first consideration. I am aware of the important action already taken by the members of the association. However, no satisfactory program is possible if we depend on the owners of the forest lands alone to take the necessary measures against forest fires. With fair assurance that the producing plant, the forest, will be protected and not destroyed, we are ready for the next step in the educational field—the proper management of the forest. Foundation for such a step can be laid by establishing co-operative management practices, including reforestation through planting and seeding.

"In emphasizing the need for education, I have in mind a training program for local tie buyers, in which they advise local operators and timber-land owners as to proper woods practices. Such a program can be correlated readily with the U. S. forest service, the various state foresters and extension foresters. Too many one-tie trees are cut now. We can have these same field representatives stress more than ever the need for individual fire-prevention measures and point out the loss in the lowered quality of fire-killed and damaged timber. You should get behind every current local measure that tends toward a more careful utilization of the products from forest lands and discourage the marketing of ties and other forest products from lands that are ruined so completely by exploitation that the community has no future values to look forward to."

### The Effect of Revised MPR-216

Reporting on How Revised MPR-216 Has Affected the Crosstie Industry, the committee, of which T. J. Turley, Bond Brothers, Inc., was chairman, stated that to gather the information upon which the report was based questionnaires were sent to key men in producing areas, asking replies to the following questions:

1. Has the dollars and cents ceiling had the effect of (a) increasing, (b) decreasing, or (c) stabilizing the production of ties?
2. Does it tend to lower the grading of ties?
3. Are current prices sufficient to allow producers to purchase timber, manufacture ties and make a reasonable profit?
4. Can you suggest changes which will make the regulation more workable and more satisfactory for the furtherance of the war effort?

Replies indicated that production had increased since the regulation became effective, principally in the TC and TD groups, since more of such ties are being accepted by the railways, but also because the price differential under the regulation is not as great between the oak groups and the mixed hardwoods as was being paid in some territories before this regulation became



effective. Furthermore, the stimulation of production in the TC and TD groups allows tracts of timber to be worked which were not particularly attractive before this regulation was issued. It was also stated that, in some sections, the increased production was not so much the result of price as of lower grading. As a rule, buyers who were not paying the ceiling prices started to do so as soon as the regulation went into effect. A railway demanding a very high-grade tie, if competing with other roads having less stringent inspection requirements, soon found that if it was to get any ties it would have to grade them the same way as the others. This situation has heretofore been taken care of by price differentials, but as the price is now the same for all ties, the grading problem is difficult of solution.

Other reasons for increased production were that the establishment of a ceiling fixed a definite market price for everyone connected with the tie business, whether he is a contractor, a yardman, a tie hewer, a sawmill operator producing a relatively few ties or a timber owner. Generally speaking, the prices established were in excess of those in effect immediately preceding the effective date of the order. With a ceiling price, contractors and producers had a stable basis on which to make their plans and this tended to stimulate and rehabilitate the tie business, which had started to dry up.

### Conditions Stabilized—But with Exceptions

It was reported that, in most cases, the revised regulation has tended toward stabilization. One interesting comment was that the stability feature had been somewhat dissipated by the fact that the OPA qualified certain small producers who under normal conditions do not have the spread between the off-wagon prices and the tie-contractor prices and it is thought that some such producers are manipulating this cushion in many ways to their own advantage.

While grading has been lowered somewhat, this has been caused more by the increased demand for ties than by ceiling regulation. In this connection, it was pointed out that one weakness that has developed in the regulation is that most roads have disregarded their delivered cost of ties and, inasmuch as they are all allowed to pay the same price for green ties f. o. b. cars at loading point, a number of the northern, mid-western and eastern railroads have placed orders in the southwestern and southeastern territories where the originating roads have been procuring their ties, and this developed into a scramble for crossties between these foreign lines and the originating lines, with the net result that there has been a lowering of grade.

It was generally agreed that prices are sufficient to allow producers to purchase timber and manufacture ties with a reasonable profit. However, there are certain sections where there is a heavy demand for labor at war plants that are paying higher wages than our industry can afford to pay, and where there is a demand for common car blocking, mine material and industrial lumber which carry higher maximum prices and are made from practically the same class of timber.

It was also generally agreed that, if properly applied and enforced, the regulation is workable and equitable with a few minor changes such as:

1. Upward revision of the price for long switch ties.
2. That the OPA be more strict in the definition of "tie contractor."
3. Upward revision in the price of pine ties.
4. Slight revisions in group border lines where there is an

abnormal differential in price, as such a condition causes ties to be hauled from the lower price zone to the higher one, which is contrary to the policy of the OPA.

In practically all of the replies to the questionnaire, it was brought out that the chief production problem is a shortage of labor. It was suggested that if local draft boards can be made to understand that men working in the timber industry should be considered for deferment to the same extent as farmers and men in other essential industries, we will have gone a long way towards getting some relief. Some farmers will not now leave their farms, even though they have some spare time to work at sawmills, for fear it will jeopardize their status with the draft boards.

### Destructive Governmental Plan Forestalled

In its report, the Legislative committee, of which B. N. Johnson, Wood Preserving division, Koppers Company, was chairman, said that no more concrete case can be cited of the power of protest of the ordinary citizen, acting through his duly elected representatives, than that of the modifications in the Forest Products Service Plan, resulting from a nation wide protest against the proposal for the U. S. Forest Service to go into the lumber business with an initial capital of \$100,000,000. If the original plan had been approved, it would have constituted one more step toward the communal conduct of all enterprises. As a result of these protests, Congress became actively interested in the question and the chairman of the Lumber and Timber Products war committee informed the President that he disapproved the proposed plan.

The original plan proposed that many governmental authorities engage in various phases of the lumber business, including preferential priorities, and markets, with grants of federal funds to finance the production, purchase, transportation and sale of forest products. On February 26, 1943, the President finally disposed of the joint recommendation by Secretary of Agriculture Wickard and War Production Board Chairman Nelson for the establishment of a "Forest Products Service" plan.

The revised plan is under the jurisdiction of the War Production Board, and any activity of the forest service is to be initiated by it only at the War Production Board's request. The new plan, which provides that the activity shall be essentially to provide advisory, technical and co-operative service to the industry, involves no element of government competition, preferential priorities or markets to anyone, or of federal forest regulation.

### Preventing Checking and Splitting of Ties

Recognizing the shortage of anti-checking irons, the Committee on Checking and Splitting of Ties, of which W. H. Firmin, Wyoming Tie & Lumber Co., was chairman, reported that an investigation as to the possibilities of using substitutes developed the information that the painting of the ends of ties with creosote, coal tar, red lead and certain proprietary materials had given such poor results that those who had made the experiments were convinced that the benefits obtained were not worth the effort, time or expense involved in making the applications. As a result of this investigation, the committee concluded that the application of anti-checking irons remains the best method for reducing splitting losses in ties during the period of air seasoning.

# Don't Underestimate the Airplane

**Ton-mile costs invading railroad freight service are predicted, with government subsidies helping**

**By E. S. Evans**

*President, Evans Products Company, Detroit*

**T**ODAY every man in the transportation business is interested in what the airplane is going to do to its future, not only in domestic but world transportation. Is it going to be possible for the airline operators to get their costs down to a point where they will be a serious threat to rail and truck transportation or are they going to be restricted to only that type of freight transportation that relates to the highest brackets; that is, express and mail? This is a serious question and one that should be studied with care.

If we accept the standards of comparison as set up by recent writers on the subject—using the C-47 airplanes to measure the capacity and efficiency of the air against modern freight trains—we will be fooling ourselves and be lulled into a false security. It would have been just as foolish in the 1920's to have taken the airplane of that day and said that, for reasons of comparison, we would limit ourselves to the frail airplanes with fabric-covered wings, tubular fuselages, and small engines, as to use the present already-obsolete DC-3's or C-47's as a standard of measurement, or to use the standard "40 and 8" French box cars as a standard of comparison with modern American freight cars.

Airplane designers and manufacturers have already built planes weighing up to 160,000 lb. gross, with freight-carrying capacity of almost half their weight, and on the drafting boards today are designs of freight-carrying airplanes weighing 250,000 lb. In view of the fact that there is hardly any limit from a structural standpoint to the size of the airplanes, the planes of the future will be built with a view to the economics of the problem and will take into consideration all of the factors relating to that problem—such as economy in manpower, economy in operation, speeds, landing fields, shipping centers, etc.

## **Old Planes Not a Fair Measure**

Knowing American genius and indefatigability, we may expect that every avenue will be explored, every device employed, once the aviation experts undertake the solution of air freight transportation, to improve power units, wing design, streamlining and every other device that their profession can devise to bring the costs of air operation to the lowest possible point.

To be of any value in estimating the impact of skyway competition, we should try and project our thought to at least the probabilities, if not the possibilities, of future development in aircraft and air transport operation. The C-47, which is the converted old DC-3 passenger plane, weighs 31,000 lb. gross and will carry 8,000 lb. payload at 160 m. p. h., and this is the plane that has been used as a standard by which to measure air competition with the railroads.

The ton-mile cost of operating this plane with 100 per cent load factor is approximately 15½ cents. The C-46 is roughly estimated to cost, with 100 per cent load factor, about 10½ cents per ton-mile. But there already has been built the Lockheed Constellation, C-69, which weighs 90,000 lb., will carry 32,000 lb. payload, and whose operating cost would be from 5 cents to 7 cents a ton-mile.

In view of the fact that there is already being built another cargo plane which weighs 190,000 lb. and which we estimate will have a payload of 76,000 lb., and that other planes of much greater size are being considered seriously, then if the railroads are going to think about air competition in a realistic way they must think about it in terms of huge cargo carriers with operating costs or ton-mile costs well within the range of our present l. c. l. rates of 4 cents per ton-mile and lower than railway express charges.

With the addition of trailer planes, and properly designed tow planes, these operating costs can again be lowered, so that air competition can enter the field of first class freight for which the railroads are now charging a little over 3 cents a ton-mile.

## **Miscellaneous Freight**

It is almost impossible to say what the ton-mile cost of railroad freight is if you try to break it up into its various classifications. The overall costs are easily ascertained and slightly under 1 cent a ton-mile, but this involves the carrying of 684 million tons, or 55 per cent of the 1½ billion tons of freight originated by the railroads, of coal, ore and other products of the mines. In addition, there are 189 million tons consisting of agriculture, animals, products of the forest which, also, to a large degree, are not suitable for air shipment—though perishables such as fruit, vegetables, meats, particularly with progress in dehydration of these products, and especially flowers will be subject to air competition. The bulk of rail and truck freight which could go to the skyways would consist of box car freight commodities of a miscellaneous character which in 1941 gave the railroads 354 million tons of freight or about 30 per cent of the total tonnage originated; as well as mail, express and l. c. l.

It is recognized that the position the skyways will take in our freight picture is going to be largely dependent upon how cheaply airplanes will be able to transport freight. The longer the haul, the more efficient the airplane becomes. Whereas it might not be profitable to take a C-69 flying from New York to Chicago and carry it to the substratosphere—where it gets its most economical operating costs—if it were going to San Francisco it would unquestionably go into the substrato-



sphere at, say, 30,000 ft., which would give it its maximum speed and minimum gas consumption.

Another factor that must be taken into consideration is the development and use of trailer trains. This contemplates the designing and building of tow planes engineered particularly for the job they have to do, with

can be operated with one or two men and need not be designed to withstand the torque of the engines on the power plane, they can be built for about 20 per cent of what a plane of the same size could be built and will be much lighter in weight.

Taking into consideration the use of assisted take-off with rockets or double-header tow planes, a plane can tow behind it after it reaches its desired elevation approximately its own weight. Thus, a 200,000-lb. tow plane which would carry probably 40 per cent of its gross weight in payload, or about 80,000 lb., could, with assisted take-off, tow a glider (or gliders) equal to its own weight which, instead of having 40 per cent payload, would carry 70 per cent minimum of payload. This would give in the tow plane 80,000 lb. minimum payload, in glider (or gliders) 140,000 lb., or a total of 220,000 lb. at a reduction in speed of about 25 per cent. Trailer planes should not be confused with sailplanes or gliders used for sport purposes and which have a wing loading of 3 to 7 pounds per sq. ft. These trailer planes will have a wing loading of at least 20 lb. per sq. ft. and a speed of 200 m. p. h.



### Slower Planes and Gliders

If you have a plane with power enough to go 150 m. p. h. and you want to double the speed and make it go 300 m. p. h., you do not double the power, you multiply it by eight. Thus, if you have a power plant that will carry your plane at 300 m. p. h. and you gear it down to go 200 m. p. h., you have a great surplus of power because the same formula works in reverse.

For short hauls glider trains are ideal. A number of gliders can be towed behind one tow plane, the aggregate load being equal to the gross weight of the tow plane, and these gliders can be cut loose at the pilot's will and land independently of the train, discharge their freight, reload and, by methods already developed by Richard DuPont and the Army Air Force, be picked up without stopping the tow plane. According to the best estimates available, such an operation would reduce the cost of transporting air cargo to between 2 cents and 3 cents a ton-mile.

There are many aeronautical engineers who feel that any saving other than the convenience offered by the individual trailer planes for individual landings and take-offs can be equalled by increasing the size of the cargo plane and it is a well-known fact that the large planes which will permit of simpler construction, of stronger materials, will give relatively greater strength as against weight than will the small planes. As progress is made in air freight transport, engineering developments will tend to simplify construction and reduce costs both in construction and in operation.

### Prospective Fuel Economy

For instance, at present it is thought necessary to use 100-octane gasoline which costs 13 $\frac{1}{3}$  cents per gallon, but there is no reason that the cost of fuel for airplanes should be over 3 cents a gallon. I know of developments for trucks which permit the use of third-grade gasoline with an octane rating of from 40 to 45 which, with the equipment developed for the purpose, gives equally as good performance as 100-octane gasoline would give in a truck motor and which gives 13 per cent more mileage than the best gasoline in use today with the best present equipment. That this device, and probably others like it, can be developed for transport planes is a foregone

Mr. Evans is the manufacturer of the automobile and "utility" freight car-loading devices which bear his name, and of a kindred mechanism for use in the loading of cargo planes. His experience, therefore, includes dealing with practical problems in freight shipment both by rail and by air.

He has been an executive and director for several plane manufacturers and air lines, and recently established a fund at Wayne University for research into air cargo possibilities.

In our December 5, 1942, issue was presented a paper on air freight prospects by W. A. Patterson, president of United Air Lines, who took what may be called a "conservative" view of the plane's potentialities as a competitor of the railroads for freight traffic. Mr. Evans, in this article, foresees more economical plane performance than that envisaged by Mr. Patterson and, consequently, ascribes to cargo planes a larger potential share in freight traffic.

proper gear ratio, propeller pitch, wing design, center of gravity, etc., and with carefully streamlined trailer planes which have eliminated every surplus pound of weight and lend themselves entirely to economical carrying of cargo. In view of the fact that the glider or trailer plane has no engine, does not have to carry fuel,

conclusion and, when this is done, gasoline at 3 cents a gallon in tank car lots can be used instead of paying 13½ cents a gallon. The device that I have in mind can burn high-grade fuel oil (in conjunction with gasoline for starting) and on experiments made with the thermomeron using fuel oil, 23 per cent more mileage was obtained than on high octane gasoline with ordinary equipment.

It would be foolish for us to say that methods of this sort could not be employed with airplane engines. It will require experiment and development, but it is within the range of probability.

### Sees Two Planes Doing One Train's Work

A few comparative figures would be of interest. The average freight train for 1941 consisted of 50.3 cars, of which 36.1 per cent or 18.1 cars were empty. The cars loaded with miscellaneous freight at that time carried about 17 tons, though under the new ODT advice and pressure they are now loading them much more heavily, and this train will average about 25 m. p. h.

Now, a "sky train" will carry 110 tons with a top speed of 200 m. p. h. One plane will carry 40 tons at a top speed of 300 m. p. h. Therefore, if a train could deliver between Chicago and San Francisco 1,500 tons of freight a month, two airplanes of 80,000 lb. payload capacity each, making 18 trips per month, could carry about 1,440 tons, which is within 4 per cent of what the train can do. If a "sky train" were used, consisting of tow plane and trailers, going 200 m. p. h., one such "train" could deliver approximately the same as one railroad train during the same period and the cost could be nearly a third less than what the railroads charge for first class freight.

The things that we have just been talking about are not only possibilities—they are probabilities. That we are very close to them in point of time is indicated by the immense job of logistics being done by the Army with inadequate facilities and small planes like the C-47. The 90,000-lb. Constellation, the 250,000-lb. flying boat which Glenn Martin says he has already designed, the 190,000-lb. land plane which is in process of being built and will be completed before the end of 1944—all of these are straws in the wind which bid us be alert and on guard.

We should not let our transportation business suddenly find itself under surprise attack such as was suffered by our military forces at Pearl Harbor. Fortunately, if we act at once we have time to readjust ourselves and to meet the competition as sound and realistic business men would do. It takes time for air transportation development and engineering. It has to be done step by step and the methods of air transportation that I have described above will proceed logically and consistently for some years to come before reaching their zenith.

### Subsidies Likely

Another question which railroad men are asking is: Is the government going to subsidize airlines after the war? It is my personal opinion that it will. With modern warfare depending more and more upon air force, the country that is left without adequate aviation resources will be as badly off as countries in the past who had inadequate naval and merchant marine resources.

If the railroads take an active part in air transportation they need have nothing to fear from government

subsidies of one form or another. To the contrary, they will immediately become the beneficiaries along with the airlines.

That air competition will ruin or destroy the railroads or the truckers is absurd to suggest. If properly handled it should be a great feeder for the railroads and should add as much business as it takes away.

Regardless of the contrary opinions that have been expressed upon the subject, I earnestly believe that the railroads can and should make some sort of working arrangement with the airlines, combining their vast traffic organizations and resources with the experience that airline operators have already acquired and are developing day by day. Each will complement the other; each will benefit mutually; and together they should share the responsibility.

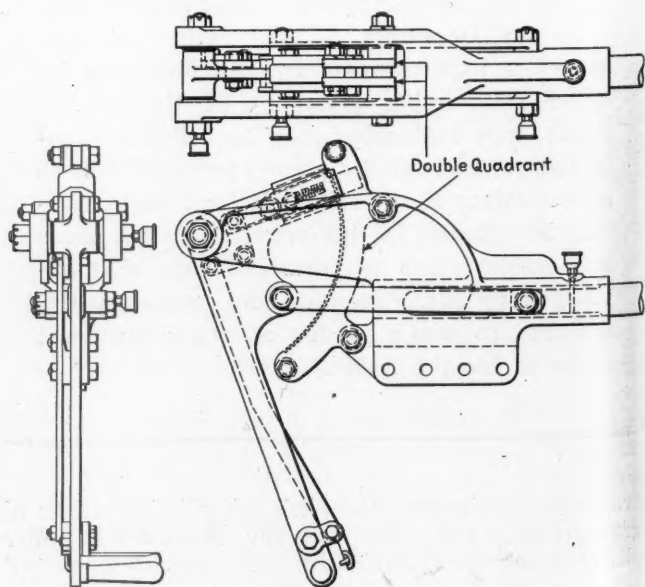
The entrance of the railroads into the airplane transportation business, which knows no land boundaries, should put the railroads into the greater field of international transportation.

## Double-Quadrant Throttle Rigging

**A** DOUBLE-QUADRANT throttle lever assembly for application on any steam locomotive where the connection to the throttle is outside the boiler has been developed by the American Throttle Company, New York.

The assembly consists of a double quadrant mounted on the assembly bracket, a throttle lever in bell-crank form on the end of the short arm of which the latches are mounted, and a crosshead guide for the rear end of the throttle operating rod.

A special feature of the double quadrant is the staggered position of the teeth on the two quadrants. This permits a fine throttle adjustment with relatively large quadrant teeth. The quadrants are in a vertical position in front of the lever so that at no time do parts project backward beyond the lever itself.



Double-Quadrant Throttle Lever with the Quadrant in Front of the Lever



# Trains Boys for Railway Work

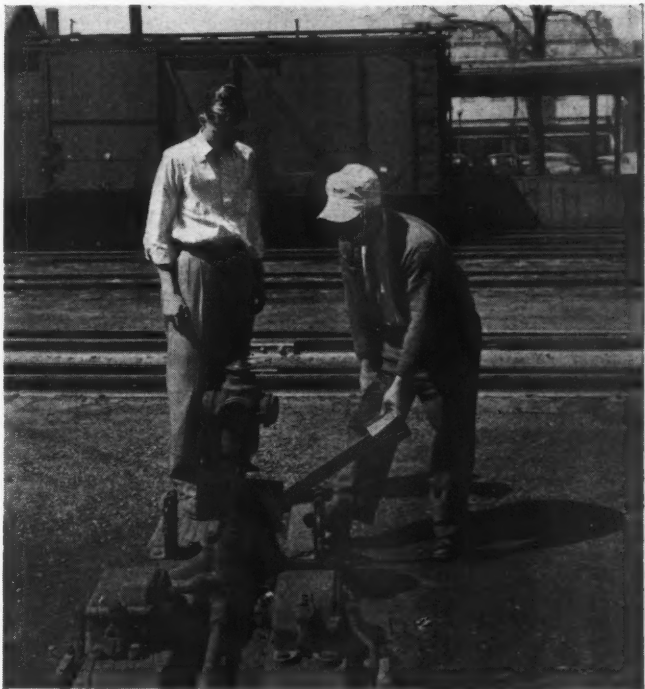
**Lads below draft age become firemen and brakemen—Are expected to save wages to resume schooling when war ends**

**T**HE Illinois Central has established a school at Carbondale, Ill., to train youths 16 years old to replace operating personnel who are joining the armed forces. The school, which opened on April 5 with a class of 54, is designed to train young men to become trainmen, firemen or switchmen, and candidates for such training are enrolled in equal numbers from the 10 operating divisions of the railroad.

The course consists of a 10-day period of oral and practical instruction, including class room work on the rules of operation. Following this, the young men, as apprentices, are given road work on trial runs under experienced men and are then given final examinations. Upon graduation, they go on the extra board on various divisions for work at standard rates of pay. A new class of about 60 is started every 10 days, as the preceding class completes its training, and the Illinois Central plans to "graduate" about 600 boys in three months. Carbondale was selected as the site of the school because of its central location and because it has all the facilities (yards, locomotives and cabooses) needed for training purposes. The faculty of the school has been carefully selected from Illinois Central "old timers" who have had years of practical experience in train service and safety and have a thorough understanding of the Book of Rules. These men were also carefully selected for the ability and personality required for successful teaching.

Young men, 16 years of age, physically qualified for the work, are eligible for this training. Sons of employees are preferred because of the natural aptitude they are likely to have for the work and about 75 per cent of the first class were sons of Illinois Central employees. The trainees are given transportation to Carbondale and their board and lodging are furnished free. They are quartered in a newly renovated hotel.

Through conferences with school authorities, boys



**Instructing One of the Switchman Students in the Proper Operation of a Ground-Throw Switch Stand**

have been permitted to leave high school to take this work. In addition to performing a patriotic duty, they are earning money which may enable them later to obtain a more advanced education than might be possible otherwise. The boys are enrolled with the understanding that they will return to school when the war is over and will be granted a leave of absence to protect their seniority rights while continuing their education.



**Left—Illinois Central Officers, Including the Faculty and Others Active in Sponsoring the School, in Session in the Classroom at Carbondale, Ill. Right—One of the Training School Students Reporting for Duty as a Brakeman to a Regular Conductor of Long-Time Service**

# The Sorocabana Electrification\*

Electric operation of meter gage line in Brazil  
will liquidate investment in less than ten years

**E**LECTRIFICATION of the section of the Sorocabana Railway between Sao Paulo and Santo Antonio, Brazil, affords an excellent example of manner in which local conditions affect railroad design and operation, and serves to emphasize the effectiveness of electric operation for certain railroad requirements. The section being electrified is 87 miles long, double-tracked, meter-gage, with maximum grades of 2 per cent. Sources of fuel are principally wood and imported coal. Native coal, because of its low B. t. u. content, is not entirely satisfactory as a locomotive fuel, and not enough coal is mined to meet the country's requirements. Water power is abundant. Common labor in Brazil receives the equivalent of 3 to 6 cents per hour in U. S. currency, and skilled labor about twice this amount. Three-thousand-volt d. c. power is supplied to the distribution system by mercury-arc rectifiers and locomotives are designed for regenerative braking. Locally-made concrete poles are used for supporting the catenary.

The Sorocabana Railway—the EFS (Estrada de Ferro Sorocabana) as it is commonly known—consists of a network of meter-gage lines traversing the southern and southwestern parts of the State of Sao Paulo in Brazil. The two principal lines in the network are one east-west line which extends 556 miles from the city of Sao Paulo westward to Presidente Epitacio, and a north-south line which runs from the port of Santos to San Pedro—a distance of 238 miles—crossing the east-west line at Mayrink, a junction point approximately 43 miles west of Sao Paulo. The 87-mile section being electrified from Sao Paulo to Santo Antonio is the only part of the 1,340 miles in the system which is double-tracked.

## Economics of Electrification

In studying the economic feasibility of electrifying the Sao Paulo-Santo Antonio line, the commission appointed by the state selected as a basis for its calculations the average traffic conditions expected to hold for the 10-year period 1942-1952—i. e., the conditions corresponding to those anticipated for the year 1947.

The railway's records for the year 1939 show the following performance for the Sao Paulo-Santo Antonio section:

	Train-miles 1,000 g.t.m.*	
Passenger .....	273,000	78,500
Suburban .....	181,200	24,400
Mixed .....	128,300	25,800
Freight .....	1,042,000	366,200
Totals .....	1,624,500	494,900

\* Gross ton-miles, not including locomotives.

The projected 1947 figures for steam operation are as follows:

	Train-miles 1,000 g.t.m.	
Passenger .....	273,000	100,500
Suburban .....	181,000	31,200
Mixed .....	128,300	36,150
Freight .....	1,623,000	572,000
Totals .....	2,205,300	739,850

Wages involved in the operation of various classes of trains per 1,000 train-miles during 1938 were:



Map of the Sorocabana Railway Lines

Class of train	Operating	Repairs
Passenger and suburban .....	\$16.26	\$33.10
Mixed .....	\$22.40	\$21.85
Freight .....	\$30.05	\$28.15

The average cost of locomotive repair and maintenance amounted to \$31.50 per 1,000 locomotive-miles.

The average cost of fuel per 1,000 g. t. m. of traffic amounted in 1938 to \$1.485.

The average costs of fuel prevailing during 1939 were:

Wood .....	\$2.37 per cord (128 cu. ft.)
Imported coal .....	\$13.63 per ton (2,000 lb.)
Brazilian coal .....	\$5.90 per ton (2,000 lb.)

Water costs amounted to an average of 2.3 cents per 1,000 g. t. m.

Lubricant (oil and waste) costs amounted to \$3.86 per 1,000 locomotive-miles.

Using the foregoing unit costs in combination with the projected traffic figures, the cost of operating the Sao Paulo-Santo Antonio line with steam motive-power would be—so far as the items to be affected by electric operation are concerned—as shown in the following tabulation. Locomotive-miles are assumed to be equal to train-miles.

Type of service	Passenger and suburban	Mixed trains	Freight trains	Totals
Train crews .....	\$ 7,390	\$ 2,060	\$ 48,800	\$ 58,250
Locomotive crews .....	15,050	2,780	46,000	63,830
Repairs .....	14,300	3,990	51,100	69,390
Fuel .....	196,100	53,700	850,000	1,099,800
Water .....	3,060	840	13,180	17,080
Lubricants .....	1,760	490	6,290	8,540
	\$237,660	\$63,860	\$1,015,370	\$1,316,890

Operation with electric locomotives differs some from that with steam and the traffic under electric operation in 1947 is expected to be as follows:

	Train-miles 1,000 g.t.m.	
Passenger .....	273,000	100,500
M-U trains .....	181,200	26,650

\* Summary of a paper by Dr. Durval Muylaert, Sorocabana Railway, Sao Paulo, Brazil, presented at the North Eastern District Technical Meeting of the American Institute of Electrical Engineers, held at Pittsfield, Mass., April 8-9, 1943.





	Train-miles	1,000 g.t.m.
Mixed .....	170,060	61,500
Freight .....	1,100,000	572,000
Totals .....	1,274,260	760,650

Summarized, the costs under electric traction are expected to amount to the following:

Type of service	Passenger	Suburban	Mixed	Freight	Total
Train crews .....	\$ 3,525	\$ 1,140	\$ 3,370	\$ 25,340	\$ 33,375
Repair crews .....	7,175	4,650	3,290	23,960	39,075
Repair and maint. of locomotives .....	6,425	....	4,010	25,840	36,275
Repair and maint. of M-U cars .....	....	1,285	....	....	1,285
Electric power .....	22,100	6,750	13,540	121,000	163,390
Lubrication .....	330	75	205	1,330	1,940
	\$39,555	\$13,900	\$24,415	\$197,470	\$275,340

Operating costs as above .....	\$275,340
Maintenance distribution system .....	20,400
Maintenance sub-and tie-station .....	12,505
Total .....	\$308,245

The total annual costs of items which will be affected by the change from steam to electric motive-power are:

Steam .....	\$1,316,890
Electric .....	308,245
Difference in favor of electric .....	\$1,008,645

In adopting electric traction for the Sao Paulo-Santo Antonio line 50 steam locomotives will be made available for rental to other divisions or roads at an annual rental price of \$1,500 per locomotive, making a total income credit from this source of \$75,000 annually.

A further credit resulting from the electrification will accrue from the release of the large number of flat cars now used for wood-fuel transport. This has been estimated to be \$12,000 annually.

Thus, the total economy resulting from the electrification is expected to be approximately \$1,100,000 per annum—a saving which when considered for a 10-year period will more than pay for the capital investment and carrying charges involved for the new system.

### Locomotives and Cars

The railroad's performance specifications stipulated that the locomotives be capable of hauling a 12-car passenger train weighing 475 tons in either direction between Sao Paulo at the eastern terminus of the electrification and Santo Antonio at the western end of the run, in 150 minutes. For the distance of 87 miles this means a schedule speed of 35 m. p. h. Calculations show that the locomotive selected can meet this requirement observing a maximum speed limit of 44 m. p. h., with 15 minutes leeway in time and two intermediate station stops.

In freight service trailing tonnages of 660 tons east-bound, and 500 tons westbound (in 20-car trains in both cases) are to be handled with a top speed of approximately 30 m. p. h.

These schedules viewed from the standpoint of American railroad practice might be considered rather slow and leisurely, but it must be remembered that the Sorocabana is a meter-gage railroad laid in mountainous territory with an abundance of 2 per cent grades and heavy curvature. Making such allowances it is safe to say that the performance is exceptionally good for narrow-gage railroading.

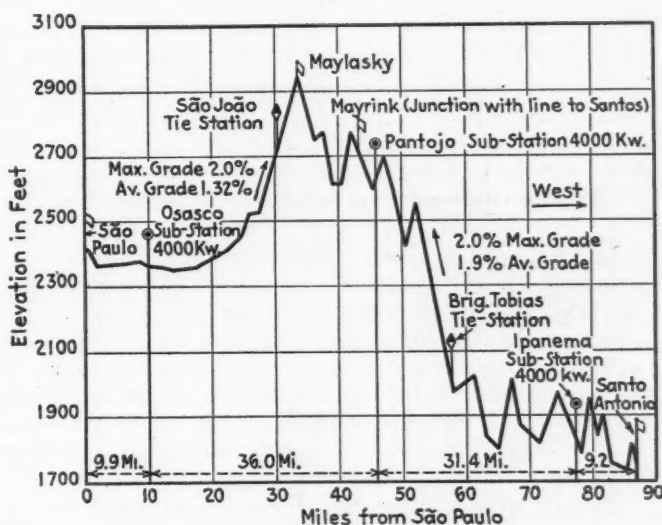
The operating schedule set up by the railway called for a total of 17 locomotives in active service at one time. To meet this requirement, to provide for spares and to allow for normal shopping, a total of 20 locomotives was specified.

Principal dimensions and ratings are given in the table:

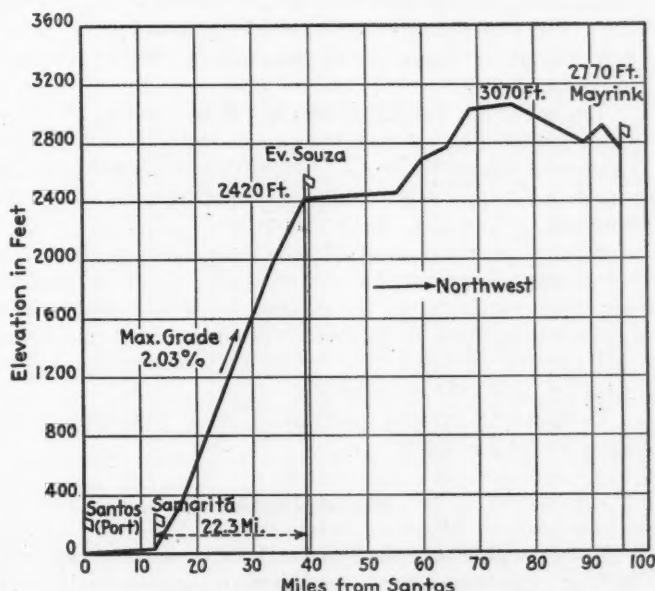
Nomenclature .....	1-C+C-1- 238/286-6GE734A-3000V
Length (inside knuckles) ft.-in. ....	61-0
Width, overall, ft.-in. ....	9-7 7/8
Height over collectors, locked down, ft.-in. ....	13-6 3/4
Wheel base, total, ft.-in. ....	50-0
Wheel base, rigid, ft.-in. ....	13-0
Diameter driving wheels, in. ....	44
Diameter guiding wheels, in. ....	33
Track gage .....	1 meter
Weight, total, lb. ....	286,000
Weight, on drivers, lb. ....	238,000
Weight, on guiding wheels, lb. ....	48,000
Weight, per driving axle, lb. ....	39,667
Number of motors and type .....	6-GE734A1 or 6-W374
Gear ratio .....	75/17

Four 3-car multiple-unit trains have been specified for handling existing suburban traffic and to provide for future commuter traffic expected with the extension of residential sections west of the city of Sao Paulo. Each train will consist of 4 motor-cars with a non-motored operating trailer at each end of the motor-car. Each motor-car has an operating position so that it may be operated singly or with one trailer.

Electrical equipment for 10 of the locomotives will be furnished by the General Electric Company and for the other 10 by the Westinghouse Electric & Mfg. Com-



Profile—Sao Paulo to Santo Antonio, the Double-Track Section Now Being Electrified



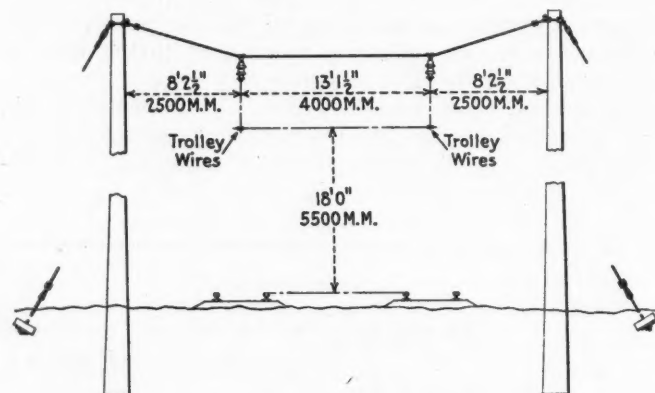
Profile—Santos to Mayrink, Showing the Relation of Mayrink, on the Electrified Line, to Santos, on the Coast. This Line Is Not Electrified

pany, all parts being built to the same specifications. The mechanical portions will also be identical, all 20 to be built by the General Electric Company.

Electrical equipment for the multiple-unit cars will be built by the General Electric while the cars will be built and equipped at the Worcester, Mass., plant of the Pullman-Standard Car Mfg. Company.

### Overhead Distribution System

The weather and cost of labor are two factors which exert an important influence on the design of the overhead system. In the United States the cost of bridge



Type of Overhead Structure Used on Tangent Track

type structures are very nearly the same as that for a cross-span type of support. For use in Brazil steel must be fabricated 6,000 miles from the field. The dimensions of the structure must originate in Brazil. The design is made in the United States and sent to Brazil to be checked. After the structures are fabricated in the U. S. A., they are shipped by rail to the seaboard, then reshipped by boat to Santos and again by rail to the field.

Brazil, with a favorable climate (freezing temperatures do not occur in the territory involved) has developed the manufacture and use of concrete beyond that of many countries. These circumstances plus low labor costs have led to the use of an overhead supporting structure consisting of reinforced concrete poles, properly guyed, a single cross-span and a simple catenary over each track.

The main line catenary span is 197 feet in length. The main messenger is 300,000 c. m. hard drawn copper cable and supports two 4/0 hard drawn copper contact wires. Each contact wire is supported by alternate hangers.

Steel supporting structures are used where necessary.

All track joints are bonded with a 4/0, 7-in. U shaped, arc weld bond. Since the system has 3,000-volts on the contact line, portable gasoline-driven welding equipment will furnish energy to the welders. Cross-bonds will be installed at 1,000 ft. intervals.

Distribution system material is being supplied by the Ohio Brass Company.

### Substations

Power will be supplied to the 3,000-volt overhead trolley by three converting substations approximately 10 miles from each terminal and at the midpoint of the electrified section. Each substation will be supplied over double circuit lines by the Sao Paulo Tramway, Light &

Power Co. Power is received by two of the substations at 88,000-volts and by the third at 44,000-volts, 60 cycles.

Rectifiers were selected rather than motor-generator sets for the conversion of the a. c. power to 3,000-volts d. c. because of high efficiency, ability to carry heavy overloads without injury, economy of substation design, reduced maintenance, etc. They will be of the single tank, multi-anode type equipped with anode grids to permit high speed regulation of voltage and accurate division of load between rectifiers in the same substation.

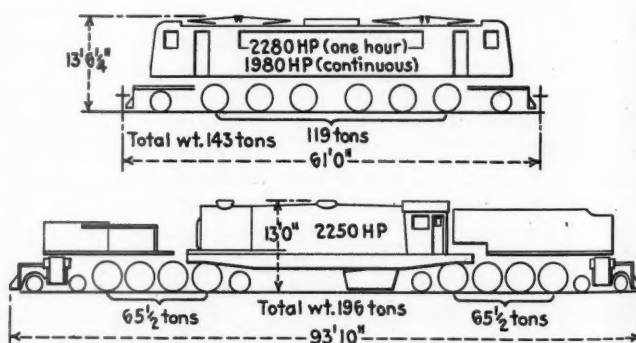
At all substations, motor-operated disconnecting switches with "De-ion" fuses will be used on the primary side of the power transformers. These will be augmented at one location where the point of connection with the power company is at some distance from the substation. For the protection of the secondary system against short circuits, circuit breakers will be used in the rectifier anode leads. All d. c. current switching will be accomplished by high-speed breakers.

To reduce the conductivity required in the trolley circuit, tie stations will be installed approximately midway between the substations. At these points the two trolley circuits will be tied together through high-speed circuit breakers.

The rectifiers and power transformers will be supplied by the General Electric Company and the switchgear for both substations and tie stations by the Westinghouse Electric & Mfg. Company.

### Regeneration

Locomotives are equipped for regenerative braking. This feature is made desirable by the serrated profile with its numerous steep grades, but no attempt is made to return surplus regenerated power to the a. c. power



Comparison of the Electric Locomotives with the Steam Locomotives They Will Displace

system. Traffic is moved by a number of relatively small trains and under these circumstances there are almost always trains to use the regenerated power. Any surplus will therefore be small, and since the railway would receive no credit if power were put back into the a. c. system, a large resistor is installed at each substation to absorb any excess regenerated power from the trolley system. These resistors are capable of absorbing 1,800-kw. each and will be mounted on the roofs of the substation buildings.

An excess of regenerated power will cause the substation bus voltage to rise above normal. This rise in voltage actuates the control which automatically cuts in the load resistor step by step as required to produce a stable voltage condition at the bus. When the traction load again predominates, the resistor is automatically cut out of the circuit.



# Railroads-in-War News

## More Steel Barges For Oil Movement

Waterways' fall capacity will  
be one-fifth of rails'  
May 1 deliveries

Plans previously announced for the construction of a water-rail trans-shipment terminal at Olmsted, Ill., near Cairo, to handle petroleum products in the movement from the Southwest to the Atlantic coast have been changed, the Office of Defense Transportation announced this week. For several reasons the program for building wooden barges to handle heavy residual oils has been curtailed, the ODT pointed out, and the proposed terminal will therefore be unnecessary.

Although allotments of steel for railroad use have been cut some 40 per cent below their third quarter requirements, as announced by the War Production Board, it has been decided to construct an additional 168 all-steel tank barges adapted to moving any form of petroleum or its products and suited to navigate the upper Ohio River or other waterways. The program for wooden barges has been reduced, the ODT explained, because they can not be used to moved so-called clean products of petroleum refining—that is, the lighter oils—for which the need is greatest, and because they can not be used efficiently on the Ohio River. A substantial part of the new steel barge order is expected to be delivered by late October, when the 21 new towboats designed to move them are scheduled for completion.

As another result of the revised plan, only 116 open-top steel barges will be converted to handle oil, instead of the 259 originally authorized. Withdrawal of the rest of these dry cargo barges from the coal movement on the Mississippi and its tributaries would hamper that traffic and throw an additional burden on the railroads, it was said. Authorizations have been obtained to build up to 400 more wooden cargo barges, but work will not be begun on this project until a survey to determine the need for replacing the 116 steel barges withdrawn from this service has been completed.

The revised program of construction of additional waterway equipment to meet the east coast oil shortage includes the following work, the ODT statement went on to say: 305 wood or composite barges of 6,000 barrels capacity; 168 all-steel barges of 9,500 barrels capacity; 100 Diesel tugboats of 600 h.p.; 21 steam towboats; and rail-water trans-shipment facilities at Jacksonville, Fla., and Panama City, Fla. Part of this equipment has been completed,

and the entire program is scheduled to go in service not later than October. The capacity of barges and Great Lakes tankers engaged in the District No. 1 oil movement is estimated at 144,000 barrels a day during the current quarter, 201,000 barrels a day in the third quarter, and 175,000 barrels a day the final quarter.

During the week ended May 1, Petroleum Administrator Ickes said last week, the all-rail movement of petroleum products into District No. 1 averaged 980,241 barrels a day, a new high record and a close approach to the autumn goal of a million barrels a day which President John J. Pelley of the Association of American Railroads last winter told the Senate's so-called Maloney committee would not be "far fetched." This total included 17,443 barrels a day moved into New England in drums in box cars and 962,798 barrels a day handled in tank cars. The tank car results showed the effect of stepped up operations of the 24-inch pipeline terminating at Norris City, Ill., Mr. Ickes said.

The Petroleum Administrator's office announced May 6 that enlarged jurisdiction over its District No. 1 activities had been lodged in its New York office, reducing the necessity for passing problems through the Washington, D. C., headquarters. H. W. Dodge, vice-president and general sales manager of The Texas Company, has been put in charge of the New York PAW office.

Projects for additional pipelines to serve the Atlantic seaboard continue to find support, meanwhile, such as one from Albany, N. Y., to Worcester, Mass., which would be provided for in a bill (H.R. 2686) introduced in the House May 11 by Representative Holmes, Rep. of Massachusetts.

## Ore-Movement Quota Cut

Chairman Nelson of the War Production Board has advised the Office of Defense Transportation that WPB has cut this season's ore-movement quota from 95,000,000 tons to 91,000,000 tons. The late opening of navigation on the Great Lakes caused the reduction. Last season the ore fleet set a record, transporting more than 92,000,000 tons.

## ODT Bus Order

Special Order ODT B-43 was issued on May 3 by the Office of Defense Transportation to effect coordinated bus operations on the route between Chillicothe, Ill., and Farmington, via Peoria. The Santa Fe Trail Transportation Company, affiliate of the Atchison, Topeka & Santa Fe, and the White Star Motor Coach Lines are involved; and the order is expected to result in a yearly saving of "more than 50,000 vehicle miles."

## Manpower Is RRs' Number 1 Problem

But featherbedding criticisms  
are gross exaggerations,  
says Mr. Eastman

Man-hour productivity on the railroads has increased 45 per cent in the years 1940 to 1942, inclusive, Joseph B. Eastman, director of the Office of Defense Transportation, said May 7 when he appeared before the House Military Affairs Committee during its hearings on pending legislation affecting the manpower situation.

Nevertheless, Mr. Eastman remarked, manpower is the transportation industry's No. 1 problem; critical shortages are increasing, and the future is full of uncertainty. In some sections operating companies may not be able to solve the problem without the help of government agencies, he added, though there are grounds for hope in a further extension of self-help measures. For example, he said, if all railroads employed the same percentage of women that the Southern Pacific now hires, there would be 70,000 more women railroad employees in the country.

Mr. Eastman's appearance before the committee followed by exactly two weeks the hearing at which George P. McNear, Jr., president of the Toledo, Peoria & Western, accused the ODT of manpower wastes in its operation of that road, and the ODT director devoted the major portion of his testimony to a discussion of "featherbed" rules and practices on the railroads in general, and in particular the situation on the T. P. & W. before and after operation of that line was taken over by the ODT by order of President Roosevelt. Mr. Eastman was accompanied at the committee hearing by Otto S. Beyer, director of the ODT Division of Transport Personnel; John W. Barriger, 3rd, former federal manager of the T. P. & W.; Holly Stover, now federal manager of the line, as well as vice-president of the Gulf, Mobile & Ohio; and George Voelkner, general manager of the road for the ODT.

In the course of his statement and in answering questions Mr. Eastman made it clear that he was not in sympathy with union policies forcing "make work" rules on the railroads. Nevertheless, he said, there has been "gross exaggeration" in criticisms of the unions for their insistence under present conditions on wasteful featherbed practices, and it is due to the employees to make the "actual facts" known.

Pointing out that the alleged wasteful  
(Continued on page 962)

## Troop Trains Start Every Six Minutes

Special movements have been stepped up to that pace, General Gross reveals

Transportation of troops by rail has been stepped up to the point where now a special troop movement is being started somewhere in the United States about every six minutes during the day and night, Major General Charles P. Gross, chief of the Army Transportation Corps, revealed May 8 during a round-table discussion over the network of the National Broadcasting Company.

At the present time, General Gross said, the railroads are carrying in organized parties approximately two million members of the military forces a month. He pointed out that the job of transportation in this war is not only bigger but also more difficult than it was in the first World War.

During the first year of America's participation in this war, General Gross disclosed, we shipped to our troops overseas twice as much materiel and supplies per man per day as we did in the corresponding period in the first World War, and there were nearly three times as many of our men overseas as there were at the same time in the last war. General Gross also said that now we sometimes ship as many tanks overseas in a single day as the United States Army in France had at the close of the last war.

The railroads are doing this much bigger job with far less equipment than they had in 1918, Col. J. Monroe Johnson, a member of the Interstate Commerce Commission, commented. Predicting that traffic will continue to increase, and will be particularly heavy in October, he declared that the ability of the railroads to handle this greater load will depend on many things. One of these, he stated, is how much equipment will be made available to the railroads, and how much work that equipment can be made to produce. Another, he said, is to what extent public cooperation and railroad technique can be improved.

Col. Johnson warned that "although the railroads have performed and are performing miracles with the equipment they have, they are fast approaching their physical limitations.

"They must have additional equipment, particularly locomotives, if they are to continue to supply fully the wants of this transportation-consuming nation. I can think of no more advantageous allocation of steel than one that will insure the arrival on the battlefield of armament, food and clothes. In fact, it takes railroads to deliver the materials that go into the manufacture of the engines of war in the first place. If our railroads fail, our entire world-wide military effort fails. We might suffer military reverses, and still win this war. But we can't avoid defeat should our railroads fail."

The tremendous overseas movement has

increased the volume of traffic flowing through our ports to the point where it not only exceeds the peak period of the first World War, but it has also reached an all-time high, Warren C. Kendall, chairman of the Car Service Division of the Association of American Railroads, reported. "In April, 1943," Mr. Kendall announced, "the railroads delivered more than 105,000 cars of export and coastal freight to the ports, or more than 3,500 a day—the heaviest on record."

Mr. Kendall also stated that in the first year after we entered this war, the railroads handled more than three and a half times as much Army freight as they hauled during the peak 12 months of the last war. Today, he disclosed, they are moving in and out of Army and Navy establishments something like 10,000 cars of supplies a day, and they are delivering another 4,000 cars each day to the many widely scattered military construction projects.

Declaring that the job the railroads are doing in bringing more than 40 million gallons of oil a day to the East has prevented a "calamity," Mr. Kendall said that approximately 72,000 tank cars and about 1,500 locomotives are now constantly engaged in this service. Besides the use of so much equipment, Mr. Kendall continued, the job is being done by routing the oil trains so the heavy load is divided among numerous railroad lines to avoid overloading in one place while leaving other lines relatively unused.

"Perhaps most important of all," he concluded, "it is being done by the closest sort of cooperation between and among the railroads, between the railroad industry and the petroleum industry, between the railroad companies and the companies which own tank cars, and between all of them and the government agencies concerned."

Albert R. Beatty, manager of the publicity section of the A. A. R. Public Relations Department, acted as forum leader.

### New ODT Publicity Chief

Samuel Botsford has been appointed information officer of the Office of Defense Transportation, succeeding Bryant Putney who has joined the United States Navy as a commissioned officer. Mr. Botsford came to ODT early last year after serving several years on newspapers in Harrisburg, Pa., and Pittsburgh. He served for some time as Mr. Putney's assistant and for the past several months as chief of the Information Office's News Section.

### Bessemer Steel in Rails

Use of Bessemer steel in the production of rails and track accessories is permitted by Schedule 7 to Order L-211 as amended May 7 by the War Production Board.

The amended schedule makes it clear that the specifications established for rail cover any rail used as trackage, including rail used in industrial plants. Rails used for such items as electrical contact are not covered. A further change in the schedule permits the use of 30 and 33 ft. rails, in addition to the standard 39 ft. length in the manufacture of frogs and switches.

## Civilian Supply Bill Is Hit by Eastman

Says proposed set-up would create a "chaotic and impossible situation"

The Senate on May 10 passed the bill to establish an independent Civilian Supply Administration, thereby approving and sending along for House consideration a measure which Director Eastman of the Office of Defense Transportation has said would create a "chaotic and impossible situation" wherein he is "quite certain" he would be "unable effectively to carry out the responsibility for domestic transportation service which has been placed upon me by the Executive orders of the President."

The bill, S. 885, is sponsored by Senator Maloney, Democrat of Connecticut. It calls for the establishment of the independent Civilian Supply Administration to supplant the War Production Board's Office of Civilian Supply. The measure has been opposed by WPB Chairman Donald M. Nelson; while the Eastman views in opposition became known last week when Senator Wheeler, Democrat of Montana, inserted in the Congressional Record the text of a letter which the ODT director had sent to Senator Maloney. Mr. Eastman sent Senator Wheeler a copy of the letter because of the latter's "long-standing interest in transportation."

Mr. Eastman took the initiative in writing the letters after the Senate committee on banking and currency had failed to request his views. He had no criticism of the committee's attitude in that connection; but he nevertheless felt impelled to go on record "because of my conviction that the bill, if enacted in its present form, would have serious consequences in the field of wartime transportation."

Addressing himself to the measure insofar as it would apply to transportation, the ODT director pointed out that the Civilian Supply Administrator would get authority to determine the amount and type of transportation services and facilities necessary to keep the civilian population healthy and functioning. He would then determine and apply to the appropriate government agencies for the amount and type of manpower, facilities, services, materials, and supplies required to establish and maintain such transportation services and facilities. After the supplies were allocated, the Administrator would determine the civilian purposes for which they would be used.

Furthermore, as Mr. Eastman put it, the Administrator "is authorized to determine the need for rationing transportation services to the civilian population and when and where rationing shall be instituted. The appropriate agencies would be required to carry out such determinations." If the Administrator were of the opinion that resources allocated to civilian use by other agencies would not enable him to carry out the purposes of the act, he would be authorized to appeal to Economic Stabilization Director Byrnes, or such other



officer as the President might designate. The appeal officer would have authority to modify the allocations.

As Mr. Eastman sees it, the establishment of a separate agency on the foregoing basis would cut across all existing war agencies "in complete disregard of their functional character, and certainly to the detriment of their successful operation." He is certain that no segregation of civilian and military requirements can be made applicable to the Nation's transportation services and facilities. "These services and facilities," he said, "cannot be divided and the operating units thereof earmarked for or allotted exclusively to civilian use as against military use or vice versa."

More specifically, the ODT director asked how it would be possible for anyone to determine the amount of rail for replacement purposes that the railroads need to maintain civilian transportation services as distinguished from the amount they need for purposes more directly related to the war effort. The same question, he added, might be asked in the case of any item of railroad property, or with respect to any other type of transportation.

"If it is agreed," the ODT director went on, "that transportation presents but a single problem, then there must be a single claimant to determine and apply for the materials and equipment required to establish and maintain the transportation service essential for both civilian and military needs. This is exactly the function the Office of Defense Transportation is now performing. I feel that it would be most unfortunate if an attempt should now be made to thrust a new and separate agency part way into the field of determining transportation priorities and preferences or of supplies and materials for transportation purposes. The fact is that it would be impossible for the proposed Civilian Supply Administrator to stop part way. He could only go the full distance and determine and apply for the materials and equipment necessary for wartime transportation as a single entity.

"In such a situation there could be only three possible results. One would be for the Civilian Supply Administrator to accept and support the conclusions reached by the Office of Defense Transportation. Another would be for both agencies to present separate and independent conclusions. The third would be for the Office of Defense Transportation to retire from this field and leave it to the Civilian Supply Administrator. Except for the first of these alternatives, it would be necessary for the Civilian Supply Administrator to equip himself with a staff such as the Office of Defense Transportation already possesses. This would add to the numerous instances of divided responsibility and duplication of effort which have existed in many federal war agencies but which, in the field of transportation have been alleviated to the extent that transportation has been recognized as an integrated function and not made the subject of divided authority.

"It cannot, I think, be claimed with any semblance of foundation in fact that the transportation system of the nation has not

### Budd Sees Need for Rail As Pressing

Railroads are operating close to their maximum capacity and must have new rails, more motive power and additional cars to avoid serious congestion of wartime traffic, Ralph Budd, president of the Chicago, Burlington & Quincy, told stockholders at the annual meeting of the railroad at Chicago on May 5. He said that the need for rail is critical and that there is no compromise with a broken rail.

"You can make cars last a little longer and you can make locomotives run a little longer but when a rail fails there is nothing to do but put in a new rail," he said. "The extremely severe use of the railway plant has caused rails to become perhaps the most critical of all our material problems and if the war lasts long it will be imperative that more new rail be laid to carry on safely with the constantly growing burden of traffic."

thus far met both civilian and military needs adequately. Indeed the criticism with which I am frequently met, in Washington but not elsewhere, is that the civilian needs have too generously been met. While I do not agree with this criticism, it seems to be reflected in S.885 by the emphasis which is placed upon the possible need for rationing transportation services to the civilian population. That is, I may say, a thought which has particularly found support in military circles."

### Draft Boards Want Names of Essential Fathers

Employers engaged in war production or in "activities essential to support of the war effort" should file with local draft boards written evidence of their employment of registrants who maintain "bona fide homes" with children born on or before September 14, 1942, but under 18 years of age, the War Manpower Commission's Selective Service Bureau pointed out last week. Local boards will furnish the proper 42B form for this purpose. Proper classification of men engaged in essential work will be facilitated by this co-operation, it was said.

### Ickes Prepares for Emergency Coal Distribution

Regulation No. 1 of the Solid Fuels Administration was issued last week by Administrator Ickes to clear the way "for emergency wartime coal distribution if such action becomes necessary in order to protect our war plants and essential civilian users from shortages of fuel." At the same time Mr. Ickes advised "the coal user who might otherwise fail to take every opportunity to store adequate fuel while it is available" that the regulation "does not relieve him in any way from his responsibility to protect himself."

The regulation stipulates that the administrator "may from time to time issue specific directions requiring, forbidding, or otherwise providing for delivery of solid fuels by or to any person or persons." It provides for the exercise of broad powers by the administrator to obtain coal from any source he finds appropriate for the relief of users with inadequate supplies. Under it, Mr. Ickes may order any producer, wholesaler, dealer, or other person to divert coal to users with inadequate fuel. Also, deliveries to particular users may be suspended so that coal can be freed for other purposes.

"The normal distribution of coal will not be disturbed unless such action is absolutely essential," Mr. Ickes said. "However, when it becomes necessary to divert coal in emergencies, I shall not hesitate to do so." In such an event the administrator "shall do everything within my power to make some kind of usable coal available to a consumer who is faced with a bona fide emergency," but "he may not get the particular kind of coal he would prefer."

### "Save Another Car Day" Drive Is Launched

An intensified campaign to "Save Another Car Day" has been launched by the Emergency Transportation committee of the National Industrial Traffic League and the Contract committee of the National Association of Shippers' Advisory Boards. The campaign for better utilization of railroad freight cars grew out of a conference recently called by Col. J. Monroe Johnson of the Interstate Commerce Commission who stated that the dwindling supply of cars which has dropped to a daily average surplus of 35,000 cars, is reaching the danger point. According to Colonel Johnson, longer hauls, heavier loading, shortages in motive power and manpower and severe winter weather have all played their part in slowing down transportation and reducing the available supply of cars for reloading.

The program recommended by the joint committee is as follows:

1. A reduction of the turn-around time of cars by the railroads.
2. More efficient use of equipment by the shippers.
3. More intensive efforts toward car efficiency by the Army, Navy and other governmental agencies.

### Government Speakers Asked to Avoid Conventions

Activities in government agencies in the past 10 days tied in with the Office of Defense Transportation's campaign to curtail unessential passenger travel on the railroads included an announcement May 10 that ODT Director Eastman had sent a letter to government agencies urging a three-point plan of co-operation by which they could contribute to the relief of the travel burden.

The proposals involve spacing of annual leaves of government employees throughout the year, reduction of government business travel to a minimum, and "careful examination" of all requests for govern-

ment speakers at conventions and trade gatherings.

The appearance of government representatives at conventions "stimulates attendance and often provides the major reason for the meeting," Mr. Eastman pointed out in stressing the interference of such gatherings with "more essential travel."

Last week Mr. Eastman made public a telegram commending the International Board of Trustees of Kiwanis International on its unanimous decision to cancel, at the ODT's request, its annual convention, scheduled to meet in Chicago June 22 to 24. Reservations for the proposed "streamlined" meeting had reached 1,500 when the decision to cancel was made, the ODT pointed out.

Decoration Day and Fourth of July holiday travel, especially by persons engaged in essential war work, was discouraged by War Production Board Chairman Nelson's May 11 statement urging that civic observances of these holidays be held this year on Sunday. Full time regular production schedules should be maintained on May 30 and 31 and July 4 and 5 by all essential industries, Mr. Nelson said.

## Manpower Is RRs' Number 1 Problem

(Continued from page 959)

practices, including those due to union rules and working agreements and those resulting from statutory requirements, in general relate to train and engine service employees, or to about 22 per cent of all railroad employees, and that the major part of the criticism has been directed against results of the mileage basis of pay, where standards based on train speeds of many years ago determine the amount of service for which a man gets a full day's pay, the ODT director declared that this situation affects the pay an employee receives much more than it does the use of manpower. It was imposed on the men by management many years ago, he told the committee, as an incentive to speed train operation. Under present conditions, where there are any train delays due to wartime traffic movements, he added, the mileage basis of pay is favorable to the railroads, while under the light traffic of the depression period it was favorable to the employees.

Conceding that most train and engine service working agreements provided for mileage limitations restricting an employee's service during any given month, Mr. Eastman said this practice was desirable when there were many men on the extra lists who were not getting much work. It is not necessary and not desirable now, he added, and the heads of the unions concerned have agreed to cancel or relax such restrictions for the duration of the emergency. However, he went on to say, it is necessary for the individual railroads and the local unions to effect these modifications through negotiations, and this process is "not yet complete."

Another basis for criticism of the agreements, Mr. Eastman remarked, is the In-

terstate Commerce Commission tabulation of time paid for but not worked. This figure is misleading, he declared. As a matter of fact, he told the committee, a very small fraction of the time so reported results from men completing a day's work in less than eight hours. Most of it is a "purely statistical" difference between the time actually worked and the time that would have been required to make the run on the standard basis of figuring pay.

To support his contention that manpower is not being wasted to any extent on the railroads under present conditions, Mr. Eastman called the committee's attention to the figures for February on time actually worked per average man per week on Class I roads, which was 50.6 hours. For men in train and engine service the figure was 49.9 hours per week, he said.

Of full-crew laws, or union agreements having the same effect, Mr. Eastman said there was no question that they do result in unnecessary use of manpower under present conditions. In addition some so-called schedule rules are alleged to have the same result, he added. However, a "quick estimate" of the manpower waste so caused indicated that a total of 6,522 men, or 2.2 per cent of the number of men in train and engine service, might be involved, of which 4,284 would come under the full-crew laws. The ODT director remarked that he had tried to convince union leaders that they have an opportunity to win public favor at a time when unions are losing favor by relaxing some of these requirements, and they have done this "to some extent." They are "entitled to a good opportunity to get rid of these rules," he declared.

Questions from the committee failed to get from Mr. Eastman an expression of opinion as to whether two men are needed on Diesel-electric switching locomotives, nor did he commit himself as to how many men should be required on Diesel-electrics in road service, though at least one Congressman said there are now "far too many."

Taking up the controversy over the Toledo, Peoria & Western, Mr. Eastman told the committee that it had not been his policy to try to set up innovations in union agreements "on one little railroad" when he had no control over working rules and wages on all the other railroads in the country. When the union agreements were arrived at after the ODT took over the road's management he got as favorable rules as he could, he said. In fact, he told the committee, the agreement approved by the arbitrator and since in effect is better, from management's viewpoint, than that of any other road in the surrounding territory. It resulted from bargaining, he said, when ODT stepped in to prevent the agreement from including every provision most favorable to the unions that their representatives could find among all the agreements in the country, at a time when the decision threatened to go to the unions unopposed through Mr. McNear's failure to appear.

Figures on net income earned by the road under ODT management, which Mr. Eastman gave the committee, are subject to

charges for depreciation and income taxes, he remarked, as it has not been determined what disposition is to be made of the road's profits under federal operation. Nevertheless, he said, the operating ratio compares favorably with that of other roads, and with past performances. Calculations of manpower efficiency on the T. P. & W. before and after the ODT took over the road are subject to revision, Mr. Eastman declared, because the figures on employees in train and engine and yard service were not correctly reported to the Interstate Commerce Commission. Thus, in October, for example, where the I. C. C. records show 79 such employees in 1941 and 110 in 1942, the correct figures are 90 and 109, respectively, and calculations of train-miles, gross ton-miles and net ton-miles per employee should be based on such corrected figures.

While Mr. Eastman's comment on the controversy over the T. P. & W. was confined to an explanation of ODT policy in entering into agreements with the unions and statistical details of results of operations under ODT management, all of which had been challenged by Mr. McNear in his testimony before the committee, as reported in *Railway Age* of May 1, page 878, Mr. Stover in a brief statement asserted that Mr. McNear's objective in giving that testimony and in publishing "selected figures" in paid advertising intended to make the layman think ODT operations were inefficient was in fact an "unfair" effort to use the committee as a "sounding board" for "a general smear campaign against the ODT and Mr. Eastman."

## WPB Forms Rail Steel Mill Advisory Committee

Formation of a Rail Steel Mill Industry Advisory Committee has been announced by the War Production Board. William F. Vosmer is the government presiding officer, and committee members are: H. P. Bigler, Connors Steel Company, Inc., Birmingham, Ala.; F. G. Carrel, Franklin Steel Works, Franklin, Pa.; M. A. Dowling, Northern Steel Company, Boston, Mass.; Boyd Jack, Calumet Steel Company, Chicago; D. C. Schonthal, West Virginia Rail Company, Huntington, W. Va.; Joseph H. Verschleiser, Laclede Steel Company, St. Louis, Mo.; A. C. Wehl, Pollak Steel Company, Cincinnati, Ohio.

## Eastman Urges No Let Up in Coal Movement

Consumers were urged to order next winter's coal now in a statement by Director Eastman of the Office of Defense Transportation made public May 13.

"Transportation of coal from mines to consumers is today more than ever an all-rail job," said Mr. Eastman. "The railroads cannot do this big transportation job unless the coal is kept moving over the rails week in and week out all through the year."

"There are not enough coal cars available, not enough locomotives, to provide a reserve for peak movements. Coal must be hauled in the warm spring and summer

*News continued on page 967*



# THE NEW YORK CENTRAL RAILROAD COMPANY

## ANNUAL REPORT

### To the Stockholders:

The experience of 1942 strikingly demonstrates that the nation is largely dependent upon the transportation facilities of its railroads. Never before have they been called upon to move such a tremendous volume of traffic. That their performance constitutes an outstanding contribution to the war effort is widely recognized.

Your Company has participated fully with the other rail carriers of the country in this vital transportation effort.

In addition to the vastly expanded industrial production for war, other factors influenced the upsurge of railroad traffic during the year. First among these was the disruption of shipping along the Atlantic coast, and the withdrawal for war transport elsewhere of vessels formerly in coastal and intercoastal service. This diverted to the rails a huge volume of traffic, the major part of which was petroleum products that formerly moved to the eastern seaboard by water. Further diversion of both freight and passenger traffic to the rails, the extent of which cannot be accurately measured, followed gasoline rationing and the rubber shortage. In the field of passenger traffic the volume was greatly expanded by troop movements.

This abnormal wartime traffic volume has had a pronounced effect upon the business of the Company. Not since 1929 has it had a year of comparable gross revenues. Despite heavily increased costs for taxes, wages and materials, the Company earned in 1942 a net income of \$49,082,183, equal to \$7.61 a share. Increased operating efficiency, reflected in a substantial reduction in the ratio of operating expenses to gross revenues, and lower annual interest charges incident to the Company's policy of debt retirement, contributed to this result.

### Operating Revenues and Expenses

Railway operating revenues totaled \$593,666,096, more by \$145,876,441, or 32.6%, than in 1941, and included an increase of \$91,375,731, or 27.1%, in freight revenue, and an increase of \$45,649,168, or 68.5%, in passenger revenue.

The volume of revenue freight moved, as measured by the number of tons moved one mile, was 36.1% larger than in 1941. The revenue per ton mile, however, declined to 8.65 mills, the lowest since 1918. The classes of freight accounting for the largest gains in tonnage, with the percentages of increase over 1941, were: Products of Agriculture, 14.4%; Products of Mines, 14.5%; Manufactures and Miscellaneous, 19.7%.

Passenger traffic, as measured by the number of revenue passengers carried one mile, increased 55.5% above 1941. Revenue per passenger mile averaged 2.058 cents, the lowest, except for 1940 and 1941, since 1917. The movement of armed forces in active military service contributed largely to the increased volume of passenger traffic, which was further augmented by members of the armed forces traveling on furlough at reduced fares.

In both freight and passenger traffic, the volume moved constituted an all-time high in the Company's history.

### Profit and Loss Account

BALANCE TO CREDIT OF PROFIT AND LOSS DECEMBER 31, 1941	\$174,468,421
ADDITIONS:	
Net Income for the Year 1942.....	\$49,082,183
Salvage from Retired Road Property .....	51,972
Donations .....	15,892
Sundry Items .....	705,063
	49,855,110
	\$224,323,531
DEDUCTIONS:	
Dividend for the Year 1942 .....	\$6,447,394
Surplus Appropriated for Investment in Physical Property .....	97,958
Retirement of Road Property (Non-Depreciable) .....	3,532,833
Difference Between Appraised Value of Equipment of Certain Lessor Companies Retired from January 1, 1935 to December 31, 1940, and Depreciation Accrued Thereon .....	11,413,400
Sundry Items .....	1,225,741
	22,717,326
BALANCE TO CREDIT OF PROFIT AND LOSS DECEMBER 31, 1942	\$201,606,205

Railway operating expenses (before taxes, other deductions, and fixed charges) were \$402,669,598. This was an increase over the previous year of \$71,231,487, or 21.5%, due to the greater volume of business as well as a larger maintenance program, greater accruals for depreciation, increased rates of pay and higher costs of materials and supplies.

Railway operating ratio was 67.83, the lowest since 1916.

### Taxes

Railway tax accruals were \$82,890,104, greater by \$39,478,275, or 90.9%, than in 1941 and equivalent to \$12.86 per share of stock. Increased personnel and higher wage rates necessitated larger payments under the Federal railroad retirement and unemployment insurance acts, which payments amounted to \$15,204,144, compared with \$12,729,288 in 1941, and represent 2.56 cents out of each dollar of operating revenue. United States income and excess profits tax accruals were \$41,579,081, as compared with \$7,592,388 in 1941. Accruals for Canadian income and excess profits taxes totaled \$1,880,985 as against \$838,185 in 1941.

### Income Account

	1942	1941
RAILWAY OPERATING REVENUES:		
Freight .....	\$428,254,134	\$336,878,403
Passenger .....	112,259,031	66,609,863
Mail .....	11,999,746	12,224,781
Express .....	11,132,496	6,911,242
All Other .....	30,020,689	25,165,366
Total .....	\$593,666,096	\$447,789,655
RAILWAY OPERATING EXPENSES:		
Maintenance of Way and Structures (Note A) .....	\$68,547,071	\$53,156,074
Maintenance of Equipment (Note B) .....	109,096,315	92,454,568
Traffic .....	7,143,584	6,667,758
Transportation .....	197,544,216	162,457,180
General and All Other .....	20,338,412	16,702,531
Total .....	\$402,669,598	\$331,438,111
NET REVENUE FROM RAILWAY OPERATIONS ...	\$190,996,498	\$116,351,544
Operating Ratio .....	67.83	74.02
Tax Accruals .....	82,890,104	43,411,829
Net Debits for Equipment and Joint Facility Rents .....	17,706,899	15,520,955
NET RAILWAY OPERATING INCOME .....	\$90,399,495	\$57,418,760
Other Income:		
Miscellaneous Rent Income .....	\$3,349,927	\$3,246,714
Separately Operated Properties .....	2,216,517	1,734,936
Dividend Income (Note C) .....	6,919,987	7,513,672
Income from Funded Securities (Note C) ..	4,109,322	4,229,668
Miscellaneous .....	1,682,837	2,358,798
Total .....	\$18,278,590	\$19,083,788
TOTAL INCOME .....	\$108,678,085	\$76,502,548
Miscellaneous Deductions from Income .....	11,082,453	1,451,214
Income Available for Fixed Charges .....	\$97,595,632	\$75,051,334
Fixed Charges:		
Rent for Leased Roads and Equipment (Note C) .....	\$22,392,182	\$22,077,464
Interest on Funded Debt .....	24,533,511	25,409,166
Interest on Unfunded Debt .....	1,587,756	1,319,142
Total .....	\$48,513,449	\$48,805,772
NET INCOME TRANSFERRED TO PROFITS AND LOSS	\$49,082,183	\$26,245,562
Note A—Includes amortization and depreciation on roadway property .....	\$8,842,087	\$4,506,911
Note B—Includes amortization and depreciation of equipment .....	\$24,476,159	\$18,871,476
Also includes depreciation of power-plant machinery .....	\$805,344	\$254,133
Note C—Included in other income and rent for leased roads are certain inter-company transactions representing credits and corresponding debits amounting to .....	\$3,979,537	\$4,160,093
Other income also includes items representing interest and dividends amounting to received on securities of and advances to terminal and other railroad companies whose properties are jointly used by this Company, as to the major portion of which a like amount was paid to those companies as rental and included in joint facility rents.	\$1,492,940	\$1,503,643

F. E. WILLIAMSON,  
President.

# SOUTHERN PACIFIC COMPANY

## ANNUAL REPORT OF THE BOARD OF DIRECTORS TO THE STOCKHOLDERS FOR THE YEAR ENDED DECEMBER 31, 1942

Your Board of Directors submits this report showing the results of the operations and financial affairs of the Southern Pacific Company and affiliated companies for the year ended December 31, 1942.

### Income

Southern Pacific Transportation System (Southern Pacific Company and Transportation System Companies, Consolidated) and Separately Operated Solely Controlled Affiliated Companies (Excluding Southern Pacific Railroad Company of Mexico).

SOUTHERN PACIFIC TRANSPORTATION SYSTEM	Year 1942	+ Increase - Decrease	Per Cent
Freight revenues .....	\$366,924,256.83	+ \$122,483,259.08	50.11
Passenger revenues .....	72,235,106.29	+ 40,638,789.08	128.62
Mail and express revenues....	13,714,487.55	+ 4,739,457.03	52.81
All other operating revenues	19,874,964.84	+ 7,100,984.74	55.59
Total railway operating revenues .....	\$472,748,815.51	+ \$174,962,489.93	58.75
Maintenance of way and structures .....	\$39,870,845.00	+ \$9,707,185.85	32.18
Maintenance of equipment ..	67,983,957.90	+ 19,977,177.56	41.61
Traffic expenses .....	6,818,923.32	+ 530,852.01	8.44
Transportation expenses .....	136,997,561.26	+ 31,855,985.26	30.30
All other operating expenses..	20,951,385.79	+ 6,565,845.87	45.64
Total railway operating expenses .....	\$272,622,673.27	+ \$68,637,046.55	33.65
Net revenue from railway operations .....	\$200,126,142.24	+ \$106,325,443.38	113.35
Railway tax accruals .....	76,844,995.31	+ 55,416,070.49	258.60
Equipment and joint facility rents—Net .....	20,779,337.28	+ 5,844,864.66	39.14
Net railway operating income	\$102,501,809.65	+ \$45,064,508.23	78.46
Income from lease of road and equipment, and miscellaneous rent income .....	\$1,296,564.17	- \$112,300.09	7.97
Dividend income .....	3,285,218.50	- 250,631.50	7.09
Income from funded securities	306,767.72	+ 14,069.31	4.81
Other income accounts .....	2,261,049.37	- 500,995.52	18.14
Total other income .....	\$7,149,599.76	- \$849,857.80	10.62
Total income .....	\$109,651,409.41	+ \$44,214,650.43	67.57
Miscellaneous rents .....	\$109,820.71	- \$245,613.95	69.10
Other miscellaneous deductions from income .....	545,191.06	- 269,816.89	33.11
Total miscellaneous deductions .....	\$655,011.77	- \$515,430.84	44.04
Income available for fixed charges .....	\$108,996,397.64	+ \$44,730,081.27	69.60
Rent for leased roads and equipment .....	\$55,935.00	- \$2,165.71	3.73
Interest on funded debt—Bonds and notes .....	28,468,509.69	- 446,243.69	1.54
Interest on funded debt—Interest on amounts payable to affiliated companies .....	998.17	+ 76.04	8.25
Interest on unfunded debt....	155,257.86	- 378,704.66	70.92
Total fixed charges .....	\$28,680,700.72	- \$827,038.02	2.80
Income after fixed charges	\$80,315,696.92	+ \$45,557,119.29	131.07
Contingent charges .....	32,841.23	+ 1,132.86	3.57
Net income of Southern Pacific Transportation System .....	\$80,282,855.69	+ \$45,555,986.43	131.18
SEPARATELY OPERATED SOLELY CONTROLLED AFFILIATED COMPANIES:			
Operating in the United States—Net income excluding interest on bonds of separately operated Solely Controlled Affiliated Companies owned by Southern Pacific Company not included in its income .....	4,892,098.41	+ 5,088,246.33	....
Operating in the Republic of Mexico (excluding Southern Pacific Railroad Company of Mexico)—Net income .....	266,440.21	+ 255,202.98	....
CONSOLIDATED NET INCOME (a)	\$85,441,394.31	+ \$50,899,435.74	147.36

(a) For comparative purposes, 1941 figures have been restated to conform to changes in Interstate Commerce Commission Classification, effective January 1, 1942.

### Southern Pacific Transportation System

**Revenues.** The total railway operating revenues substantially exceeded those for any previous year, due to the unprecedented volume of freight and passenger traffic resulting in large part from the movement of military and naval personnel and material, raw materials and manufactures for industries engaged in production essential to the war effort, and traffic, which, except for the war, would have been moved by sea. Rail movements of gasoline, fuel oil, steel products, lumber, and canned goods, particularly, were greatly increased due to the wartime diversion of steamships from coastal and intercoastal routes. Part of the increase in passenger revenues was due to civilian travel diverted from the highways as a result of the rationing of gasoline and tires.

The net ton-miles of revenue freight carried increased 45.60%, compared with 1941. The average revenue per net ton-mile was 1.036 cents, compared with 0.988 cents for 1941. Revenue passenger-miles increased 109.54% over 1941, and the average revenue per passenger mile was 1.688 cents, compared with 1.545 cents for 1941. Despite many operating difficulties, the traffic was moved without widespread congestion or prolonged delays.

Passenger fares, with certain exceptions, were increased 10%, effective February 10, 1942, on interstate travel, and effective on various dates from February 10 to April 1, 1942, on intrastate travel.

On March 18, 1942, rates on interstate freight traffic were increased for the period of the war and six months thereafter, as follows: an increase of 3% on products of agriculture, livestock and products, and low-grade products of mines, such as sand, gravel, and slag; increases ranging from 3¢ to 5¢ a net ton on coal and coke; an increase of 6% on all other commodities, except iron ore on which no increase was authorized; and an increase of 6% in certain accessorial charges.

Corresponding increases in intrastate freight rates, with certain exceptions imposed by state regulatory bodies, were made effective on various dates from March 18 to May 1, 1942, in the states served by System Lines, except Texas. In Texas, the rate increases, with certain exceptions, will become effective March 1, 1943, as the result of decision by the Interstate Commerce Commission, dated December 18, 1942. This decision was in response to petition filed by the carriers following denial of the freight rate increases by the Railroad Commission of Texas.

**Expenses.** The increase in operating expenses, compared with 1941, was principally due to the larger forces and greater quantities of fuel, materials, and supplies, required to handle the greatly increased volume of traffic and maintain the rolling equipment, tracks, and structures, which were subjected to greater use during 1942 than ever before.

Pay rolls comprised \$171,010,718.01 of total operating expenses, an increase of \$43,918,109.75, or 34.56%. The average number of employees was 77,190, an increase of 9,767, or 14.49%. As mentioned in last year's report, wage rate increases were awarded to employees in December, 1941, retroactive to September 1, 1941, as the result of mediation under the Railway Labor Act, such increases being effective throughout 1942. There was a shortage of man-power during the entire year, and a considerably larger amount of overtime work was required of employees than in 1941.

Notwithstanding the shortage of man-power and scarcity of certain materials, the tracks and structures were maintained in a state of adequate repair, and a smaller number of locomotives and cars were undergoing or awaiting repairs at the close of the year than at the end of 1941.

Approximately 429 track miles of new rail, principally 113-lb. and 132-lb. weight per yard, and 286 track miles of relayer rail of various weights, were laid in repairs and renewals; compared with 352 track miles of new rail and 273 track miles of relayer rail laid in 1941.

There was a deficiency of locomotive power; although 59 new steam locomotives and 23 new Diesel-electric switchers were



received from the builders, and from 15 to 27 steam locomotives were in service under lease from other railroads, during the year. As explained on page 7, there were 31 steam locomotives and 30 Diesel-electric switchers on order at the close of the year.

The increase of 45.60% in the net ton-miles of revenue freight carried was accompanied by increase of but 23.53% in freight train-miles. This was the result of heavier loading of freight cars, and an increase in the average number of loaded cars per train made possible, mainly, by the lengthening of freight schedules and having in service a larger number of heavy-duty locomotives than in 1941.

There was a decrease of 3.88%, however, in the gross ton-miles of freight moved per train hour, due to the decrease in the average speed of freight trains.

The increase of 109.54% in revenue passenger-miles was accompanied by an increase of only 11.03% in passenger train-miles.

**Taxes.** Railway tax accruals took 38.4 cents of each dollar of net revenue from railway operations for 1942, and are equivalent to \$20.37 a share of the outstanding capital stock of Southern Pacific Company. The accruals by classes of taxes are as follows:

Federal unemployment insurance taxes .....	\$5,313,301.33
Federal retirement (pension) taxes .....	5,311,782.85
Other Federal and miscellaneous taxes .....	54,761,626.50
State, County, and City taxes .....	11,458,284.63
<b>Total .....</b>	<b>\$76,844,995.31</b>

The increase in tax accruals, compared with 1941, is principally due to the large amount of taxable income and increase in the Federal income tax rate; declaration of a higher value of capital stock for tax purposes, because of the larger income; and the larger amount of pay rolls, upon which Federal unemployment insurance and retirement taxes are based.

United States Tax Savings Notes, in an amount approximately equal to the amount of accruals for Federal income taxes for 1942, were acquired and are available for use in paying such taxes when due.

**Rents.** Net charges for equipment and joint facility rents increased, principally due to the larger number of freight cars of other companies moving over System Lines during the year, and the greater amount of services performed for System Companies by certain joint facilities; compared with 1941.

**Other Income.** The net decrease in income from sources other than railway operations was partly offset by a net decrease in miscellaneous deductions from income. The principal income fluctuations were a decrease of \$774,877.91 in the amount of credits to miscellaneous income for charges against Pacific Fruit Express Company for services rendered and privileges granted to that company; a decrease of \$120,000 in dividends received from Pacific Fruit Express Company; a net decrease of \$130,631.50 in dividends received from other companies; and an increase of \$116,443.71 in income from miscellaneous non-operating properties, principally due to greater rentals and royalties from lands leased for oil and gas prospecting and development.

**Fixed Charges.** Interest on funded debt—bonds and notes—was less than for 1941 as the result, mainly, of decreases in interest due to repayment in 1941 of Reconstruction Finance Corporation loans, and purchases in 1941 and 1942 of Southern Pacific Transportation System Companies' bonds and notes; such decrease being partly offset by an increase in interest on equipment trust certificates due to issuance of Equipment Trust Certificates, Series "S," and Series "T," in 1942, and the inclusion in 1942 of a full year's interest on Equipment Trust Certificates, Series "R," issued in 1941. The decrease in interest on unfunded debt was principally due to the payment in 1941 of part of the short-term bank loans, and the refinancing of the balance as Serial Bank Loans (classified as "funded debt"), as explained in last year's report.

#### Separately Operated Solely Controlled Affiliated Companies

The net income of the separately operated Solely Controlled Affiliated Companies operating in the United States, shown in the Income Account, excludes interest of \$2,348,908.62 accrued by Pacific Electric and Northwestern Pacific on bonds of those

companies owned by your Company but not included in its income. Such net income for 1942 of \$4,892,098.41 compares with a net deficit of \$196,147.92, on the same basis, for 1941. The increase of \$5,088,246.33 is largely attributable to the considerably improved earnings of the principal companies included in this group as generally indicated hereunder:

(1) Pacific Electric Railway Company: Net income of this company for 1942 amounted to \$1,546,807.42 compared with a net deficit of \$1,663,835.31 for 1941, an increase of \$3,210,642.73. (The figures for 1942 and 1941 are after charges against income of \$1,103,443.62 and \$1,253,658.49, respectively, for interest accrued on Pacific Electric bonds owned by your Company.) This increase was principally due to increased revenues from movement of greater volume of freight, passenger, and express traffic; less rehabilitation expense; and decreased charges for bond interest which resulted from the refinancing plan, mentioned in last year's report, which was commenced July 1, 1941, and completed early in 1942.

These improvements were partly offset by increases in expenses due to the greater volume of traffic, higher wage rates, and increased depreciation charges resulting from acquisition of new motor coaches.

(2) Northwestern Pacific Railroad Company: Net deficit of this company for 1942 was \$315,431.77, compared with a net deficit of \$1,573,161.17 for 1941. (The results for both years are after charges against income of \$1,245,465 for interest accrued on Northwestern Pacific bonds owned by your Company.) This improved showing was due to greater freight revenue which resulted mainly from heavy movements this year of construction materials to government projects. This revenue increase was partly offset by greater maintenance and train forces and higher wage rates.

(3) Southern Pacific Land Company: Net income amounted to \$783,656.70 for year 1942 as against \$462,524.85 for year 1941. The increase was due largely to greater income from leases and sales of real estate.

Combined net income of separately operated Solely Controlled Companies operating in the Republic of Mexico (excluding Southern Pacific Railroad Company of Mexico) amounted to \$266,440.21 for the year 1942 as compared with \$11,237.23 for preceding year. This improvement was due to net increase in operating revenues with only a relatively small corresponding increase in operating expenses.

Southern Pacific Railroad Company of Mexico had a net income of \$520,906.27 for the year 1942, an improvement of \$760,106.57 compared with the year 1941. The net income for 1942 and 1941 each include charges of about \$619,000 for amortization of investment in property which is subject eventually to reversion to the Mexican Government.

The improved showing was due, chiefly, to greater operating revenues resulting from better business conditions generally in Mexico.

#### Motor Truck Service

Motor truck services coordinated with rail freight operations of System Lines were adjusted to wartime conditions and further extended during the year, including addition of routes to serve military and naval establishments and defense industries. On December 31, 1942, over-the-highway trucking services provided by companies solely controlled by Southern Pacific Company were in operation on 12,776 miles of highways, compared with 11,194.8 miles of routes operated at the end of 1941.

#### Office of Defense Transportation

On December 18, 1941, the President of the United States, by Executive Order, established the Office of Defense Transportation, with emergency powers designed to obtain the utmost utilization of the nation's transportation facilities in furtherance of the war effort. Mr. Joseph B. Eastman, Chairman of the Interstate Commerce Commission, was appointed Director.

Mr. Eastman, with a supporting organization, having representatives in all large centers of transportation, has issued a number of orders affecting railroad operations; including orders restricting passenger service, requiring heavier loading of merchandise cars, and forming a pool of refrigerator cars, and in

addition has offered many informal suggestions; with all of which your Company has fully complied.

### Employees Aid War Effort

More than 9,000 former employees were in military service at the end of 1942; and officers and employees, during the year, participated in many activities allied with the war effort, such as purchase of United States War Savings Bonds, contributions to Red Cross and War Chests, blood donations, and gifts and entertainment for soldiers and sailors, including special efforts in behalf of former employees now in the armed services.

### In Memoriam

The Company suffered great loss in the death, on November 7, 1942, of Mr. Joseph T. Saunders, Vice-President, System Freight Traffic, who entered the Company's service in the general freight office in Los Angeles, California, in 1903, and advanced through various positions in the Freight Traffic Department to become the Company's chief freight traffic officer in 1929, which place he held at the time of his death.

## Consolidated Balance Sheet—December 31, 1942

### SOUTHERN PACIFIC TRANSPORTATION SYSTEM

(Southern Pacific Company and Transportation System Companies, Consolidated, Excluding Inter-Company Securities and Open Account Balances) The assets reported below are stated on the basis of the classifications prescribed by the Interstate Commerce Commission. No attempt has been made to adjust book values of assets to current estimated values. However, the balances in reserves for depreciation and amortization and the reserve for decline in investment securities and advances (created in 1939), have been applied as deductions from book value of investments.

ASSETS			
<b>INVESTMENTS</b>			
Transportation property .....	\$1,485,210,265.69		
Miscellaneous physical property ..	26,318,403.81		
Sinking funds .....	776,406.56		
Deposits with trustees for the acquisition of equipment trust equipment .....	1,703,168.87		
Affiliated companies—Securities and investment advances .....	271,129,959.59		
Other investments .....	15,908,068.41	\$1,801,046,272.93	
<b>Deduct:</b>			
Reserve for accrued depreciation and amortization of defense projects .....	\$165,725,227.56		
Reserve for amortization of improvements on leased property and investment in property subject to reversion .....	1,405,341.65		
Appropriated surplus—Reserve for decline in investment securities and advances .....	137,466,736.84	304,597,306.05	
Net investments .....		\$1,496,448,966.88	
<b>CURRENT ASSETS</b>			
Cash .....	\$50,210,850.51		
Temporary cash investments (United States Treasury Tax Notes) ..	50,530,000.00		
Material and supplies .....	26,090,301.64		
Other current assets .....	74,755,933.93	201,587,086.08	
<b>DEFERRED ASSETS AND UNADJUSTED DEBITS</b>			
Deferred assets .....	\$2,051,665.00		
Unadjusted debits .....	27,075,255.58	29,126,920.58	
Grand total .....		\$1,727,162,973.54	
LIABILITIES			
<b>CAPITAL STOCK HELD BY THE PUBLIC</b>			
Southern Pacific Company (3,772,763.0564 shares, no par value) ..	\$383,581,150.64		
Transportation System Companies ..	1,400.00	\$383,582,550.64	
<b>GRANTS IN AID OF CONSTRUCTION</b> .....			
		15,813,284.55	
<b>FUNDED DEBT UNMATURED</b>			
Held by the public .....	\$677,851,750.19		
Held by Solely Controlled Affiliated Companies .....	5,142,000.00		
Held in sinking funds by Transportation System Companies ...	744,000.00	683,737,750.19	
<b>NON-NEGOTIABLE DEBT TO AFFILIATED COMPANIES</b>			
Open accounts .....		12,130,438.54	
<b>CURRENT LIABILITIES</b>			
Accounts and wages payable .....	\$33,192,055.36		
Interest matured unpaid .....	3,531,134.20		
Interest payable January 1st .....	4,034,201.25		
Unmatured interest accrued .....	5,639,803.02		
Accrued tax liability .....	61,367,128.16		
Other current liabilities .....	6,106,942.25	113,871,264.24	
<b>DEFERRED LIABILITIES</b>			
Conditional sale agreement equipment obligations—Deferred payments .....	\$6,372,247.61		
Other deferred liabilities .....	295,210.37	6,667,457.98	
<b>OTHER UNADJUSTED CREDITS</b> .....			
		40,149,466.28	

<b>CONSOLIDATED ADJUSTMENT</b>		
Excess of inter-company liabilities over assets eliminated .....		69,375,786.11
<b>CORPORATE SURPLUS</b>		
Appropriated surplus .....	\$147,894,953.90	
Less: Reserve for decline in investment securities and advances deducted from "Investments" above ..	137,466,736.84	
Balance of appropriated surplus .....	\$10,428,217.06	
Profit and loss—Balance .....	391,406,757.95	401,834,975.01
Grand total .....		\$1,727,162,973.54

**Transportation Property.** The increase during the year in investment in transportation property of the Southern Pacific Transportation System amounted to \$26,132,254.16, as follows:

Expenditures for road extensions .....	\$764.40
Expenditures for additions and betterments:	
Rolling stock .....	\$26,819,436.33
Miscellaneous equipment .....	77,597.09
Other additions and betterments .....	27,047,610.52
Total expenditures .....	\$53,945,408.34
Less: Property retired, equipment vacated, and other adjustments .....	27,813,154.18
Net increase .....	\$26,132,254.16

The following new rolling stock was delivered on orders placed in 1941 and 1942: 10 general service steam locomotives, 49 articulated-consolidation steam locomotives, and 3,644 freight-train cars, covered by Equipment Trusts; 23 Diesel-electric switchers, 295 freight-train cars, including 165 steel cabooses, covered by conditional sale contracts; and 90 freight-train cars provided out of treasury funds. Improvements to a number of owned units of rolling equipment were completed during the year.

Scheduled for delivery during the first six months of 1943, on orders placed in March, 1942, for 30 Diesel-electric switchers, are 20 such switchers which have been tentatively assigned by the War Production Board in its present program. Also scheduled for delivery during 1943 are 10 general service and 21 articulated-consolidation steam locomotives, for which orders were placed in March, 1942. Deliveries of the articulated-consolidation locomotives are in progress.

A new single-track railroad, 30.1 miles in length, between Redding and Delta, California, was conveyed to the Central Pacific Railway Company by the United States in exchange for title to 36.43 miles of the former main line which, for the most part, was located within the area of the reservoir of the Shasta Dam. The new line was constructed at the expense of the United States. It is equipped with Centralized Traffic Control.

Approximately 534 track-miles of the rail laid in renewals during the year replaced rail of lighter weight. Approximately 168 track-miles of new sidings, yard tracks, and extensions of such tracks were completed, and additional such work was in progress at the end of the year. Centralized Traffic Control was installed between Delta and Black Butte, California, 49.9 miles; and between Santa Margarita and San Luis Obispo, California, 16.3 miles. Another such installation is in progress between Bena and Tehachapi, California, 32.7 miles. Among other projects completed or undertaken were construction of new passenger station at Yoakum, Texas; modernization of the stations at Martinez and Monterey, California, and Tucson, Arizona; improvement of engine house and shop facilities at various terminals, including installation of larger turntables; improvement or expansion, at 42 locations, of facilities for supplying water for locomotives; and improvement, at 7 locations, of facilities for supplying oil to locomotives.

The former line between Redding and Delta was retired; and 268.82 road-miles of branch lines and 4.2 miles of unused main line were abandoned under authority of the Interstate Commerce Commission. Approximately 157 miles of sidings, spurs, and other tracks no longer required for operating purposes, were also retired, releasing material for reuse or sale.

**Capital Stock.** There was no change during the year in the number of shares of capital stock of Southern Pacific Company issued and outstanding. The number of stockholders, at the end of the year, was 41,351, compared with 41,627 at the end of 1941.

The Board of Directors, on October 15, 1942, declared a dividend of \$1.00 per share on the capital stock of the Company, payable December 21, 1942, to stockholders of record at the close of business on November 21, 1942.



**Funded Debt.** There was a net decrease of \$26,244,275.79 in the amount of funded debt of Southern Pacific Transportation System held by the public at December 31, 1942, compared with December 31, 1941.

To provide for the construction and acquisition of new rolling stock, the following equipment trusts were created in 1942:

Southern Pacific Company Equipment Trust, Series "S," covering an issue of \$4,430,000, par value, 2½% Equipment Trust Certificates. The certificates are guaranteed by Southern Pacific Company; are dated January 1, 1942; mature in amounts of \$443,000 on January 1 of each year from 1943 to 1952, both inclusive; and have attached dividend warrants payable semi-annually on January 1, and July 1, of each year; and

Southern Pacific Company Equipment Trust, Series "T," covering an issue of \$5,660,000, par value, 2½% Equipment Trust Certificates. The certificates are guaranteed by Southern Pacific Company; are dated April 1, 1942; mature in amounts of \$566,000 on April 1 of each year from 1943 to 1952, both inclusive; and have attached dividend warrants payable semi-annually on April 1, and October 1, of each year.

The \$15,000,000 of bank loans outstanding at December 31, 1941, were paid off during the year, as follows: \$2,500,000 each on March 5, March 25, and April 15, 1942, and \$3,750,000 each on May 25, and June 29, 1942. Other funded debt in the prin-

cipal amount of \$21,334,275.79 was retired or acquired, during the year.

### General

During the past year the Transportation System and separately operated Solely Controlled Affiliated Companies operating in the United States expended \$39,586,000 (excluding non-cash items) for additions and improvements to their several properties, including \$22,548,000 from the proceeds of equipment obligations; expended \$35,590,000 for the retirement of debt, of which \$15,000,000 represented the payment in full of outstanding bank loans; and purchased \$10,000,000 of United States Treasury notes, in addition to such notes purchased in respect of tax liability referred to elsewhere in this report.

The Board acknowledges the cooperation received from governmental authorities, Army and Navy officers; shippers, travelers, and the general public; other railroads; and the Company's own employees; which substantially aided in the movement of the unprecedented volume of traffic on the Company's Lines, during 1942.

By order of the Board of Directors,  
**A. T. MERCIER, President.**

[Advertisement]

## NEWS

(Continued from page 962)

months as well as in the fall and winter months. If the movement slackens off in the non-heating season, the railroads will not be able to haul enough extra fuel next fall and winter to make up the difference, and suffering will result."

### A Hundred Thousand People Kept a Secret

"Vox Pop," a well-known CBS radio program, on May 10 paid tribute to Schenectady, N. Y.,—"The City That Kept the Secret of the M-7 Tank-Killer." Parkes Johnson and Warren Hull, "Vox Pop" interviewers, toured the American Locomotive plant in that city and inspected some of the new locomotives under construction there as well as the tanks and tank-killers.

During the program several citizens of

Schenectady and employees of the American Locomotive Company were asked to tell how they helped to keep the secret of this deadly weapon, pioneered and built at the American Locomotive plant more than a year ago.

Major General George V. Strong, assistant chief of staff, G2, in charge of military intelligence for the U. S. Army, appeared on the program and complimented the city on the fact that its 100,000 citizens kept this military secret. He said, "Schenectady has won the highest respect of the War department. The army urges the entire United States to adopt the same guarded attitude about careless talk that has proven so effective in your home town."

### Recommends Inventory of Railway Personnel

The Manpower Committee for the railroad industry, in session this week with officials of the Office of Defense Transportation, recommended preparation of a personnel inventory by all Class I railroads.

Designed, as the ODT press release put it, to provide the industry with an overall manpower picture, the inventory would be conducted and kept current by the individual roads with the assistance of the Railroad Retirement Board and the Association of American Railroads. The study would make available data on the work record as well as on the age, sex, marital, and dependency status of each employee in the industry. This information would be expected to assist the railroads in appraising their present manpower situation, in estimating probable losses of men to the armed forces and in planning for the orderly withdrawal of these men from the industry.

The committee authorized appointment of a sub-committee to consult with the War Manpower Commission and the Selective Service System on the development of an adaptation of the Replacement Schedule Plan to the railroad industry. Lawrence Appley, executive director of WMC, ex-

plained the principles and operation of the WMC's regional and area stabilization programs.

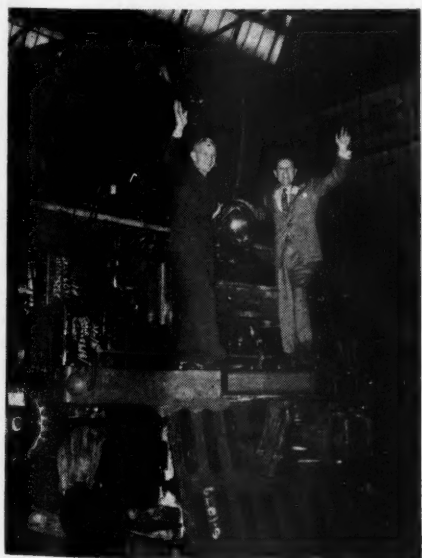
"Warning that the railroads as well as all other industries must be prepared to release to Selective Service practically all able bodied men between the ages of 18 and 38 years was sounded by Col. George Baker, of the Selective Service System," the ODT release said. Colonel Baker was also said to have pointed out that Selective Service calls this year will bring the total number of men in the armed forces to approximately 11,000,000 men, while another 3,500,000 will be deferred for agricultural work. Deferments for all industries, he said, cannot exceed more than 1,200,000 men according to present estimates. He was also reported to have advocated early preparation of Replacement Schedules "so that withdrawals for military service may be made in orderly fashion and time given the carriers to meet their manpower problems."

### April Export Freight

Cars of export freight, other than grain or coal, unloaded at Atlantic, Gulf and Pacific ports in April this year totaled 99,240 cars compared with 73,061 in April, 1942, according to the Association of American Railroads. Cars of grain for export unloaded in April this year at these ports totaled 5,607 cars compared with 3,217 in the same month last year.

The average daily unloadings of 3,510 cars of export and coastal freight at all United States ports in April was the heaviest on record. The nearest approach was the previous month when the daily average was 3,386 cars.

WITH THE MAY issue of the Official Railway Guide that publication completed 75 years of service to the railroads and the traveling public. The first issue, containing 140 pages, was published in June, 1868, and the volume has appeared regularly each month without interruption since that time.



**Parkes Johnson (Left) and Warren Hull (Right) on Vox Pop at the Schenectady, N. Y., Plant of the American Locomotive Company**

# GENERAL NEWS

## Would Give Study Board More Money

Senate sub-committee proposes appropriation, but other hurdles remain

Additional appropriations totaling somewhere between \$300,000 and \$400,000 to carry the Transportation Board of Investigation and Research to the end of its statutory life, as now extended by Presidential order to September 18, 1944, are understood to have been recommended this week by a Senate appropriations subcommittee for inclusion in the pending Independent Offices Appropriation Bill for the fiscal year ending June 30, 1944. The full Senate appropriations committee had not acted on the bill as reported to it by the subcommittee as this issue went to press.

Should this full-committee hurdle be negotiated, the proposed appropriation will nevertheless have others to get over. Congressional action on the bill would still require passage by the Senate, consideration by a conference committee for the ironing out of differences between House and Senate versions, and action by both branches on the conference report. It was the House which last year insisted upon attaching to the Board's fiscal 1943 appropriation a stipulation to the effect that the amount there provided should be so used as to complete the work of the Board.

That stipulation was accepted by the Bureau of the Budget as binding upon it; and thus the fiscal 1944 budget contained no estimate for the Board. No effort was made to insert an appropriation for the Board while the Independent Offices bill was under consideration by the House; but the Board did go before the Senate appropriations subcommittee, meanwhile having delivered to Congress the report on interterritorial freight rates which had been prepared in response to a commitment made to Senator McKellar, Democrat of Tennessee, a member of the Senate committee on appropriations.

In its final presentations to the Senate subcommittee, the Board is reported to have submitted revised estimates calling for additional appropriations of \$552,500 or somewhat more than the \$300,000 to \$400,000 which the subcommittee is understood to have recommended, as noted at the outset. Data submitted in connection with the presentation are understood to show that money spent and allocated up to June 30 for the interterritorial rate study totals \$74,265, and the Board wanted \$12,000 more to complete that work. Expenditures and allocations to June 30 on the study of

the relative economy and fitness of carriers total \$309,166, and the Board asked \$330,700 more to complete it. It asked for \$12,000 more to complete the study of the impact of taxation on carriers on which \$72,346 has been spent and allocated; and \$10,800 more to complete the study of public aids to carriers on which \$72,882 has been spent and allocated.

### Uniform Rate Bill

Another bill to carry out the legislative recommendations of the Transportation Board of Investigation and Research's report on interterritorial freight rates has been introduced in the House by Representative Miller, Republican of Nebraska. It is H.R.2645.

### Operating Employees Wage Case Delayed Until Next Month

Emergency board hearings on the pending wage demands of the operating brotherhoods will be delayed until after June 1, Dr. William M. Leiserson, chairman of the National Mediation Board and of the National Railway Labor Panel, said this week. He had received from management and labor representatives a copy of a joint agreement wherein the parties had got together on the request for the delay.

Dr. Leiserson stated that he would meet the request, but had not yet decided upon the membership of the board to be selected from the Panel or the date for hearings.

### New ODT Perishable Freight Director Appointed

Charles W. Taylor has been appointed assistant director in charge of perishable freight of the Division of Railway Transport of the Office of Defense Transportation. He succeeds Horace M. Wigney, whose resignation was reported in *Railway Age* of April 17, page 797. Mr. Taylor is a native of Texas. With the exception of one year with the Southern Pacific Lines in Texas and Louisiana, his railroad career has been spent in the service of the Atchison, Topeka & Santa Fe and its subsidiaries, and at the time of his present appointment he was assistant to the general superintendent of transportation of that road, stationed in Chicago.

### Allegheny Transportation Conference May 18

A meeting of the Allegheny Region Traffic and Transportation conference, sponsored by the Chamber of Commerce of Pittsburgh and the Allegheny Regional Advisory Board, will be held at Pittsburgh, Pa., on May 18. In addition to a discussion of present transportation conditions, consideration will be given cross-hauling and motor carrier embargoes against small shipments.

## 2nd-Quarter Traffic Seen Up 29 Per Cent

Shipper Boards' loading forecast indicates that rise, I.C.C. Bureau says

If the Regional Shippers Advisory Boards' estimate of second-quarter carloadings should prove to be accurate, it would indicate "an increase in revenue ton-miles of about 29 per cent over the ton-miles of the corresponding 1942 quarter as a result of the greater load and longer haul," according to the latest issue of the Monthly Comment on Transportation Statistics prepared by the Interstate Commerce Commission's Bureau of Transport Economics and Statistics.

The Advisory Boards' estimate predicted that second-quarter carloadings would be 2.5 per cent above those of the comparable 1942 period. A tabulation wherein the Bureau sets up the Boards' estimates for the five previous quarters against actual loadings reported by the Association of American Railroads shows that the Boards have been low twice and high three times. For the first quarter of this year the estimate predicted a 3.4 per cent increase over the first three months of 1942, whereas the actual loadings were up only 2.6 per cent.

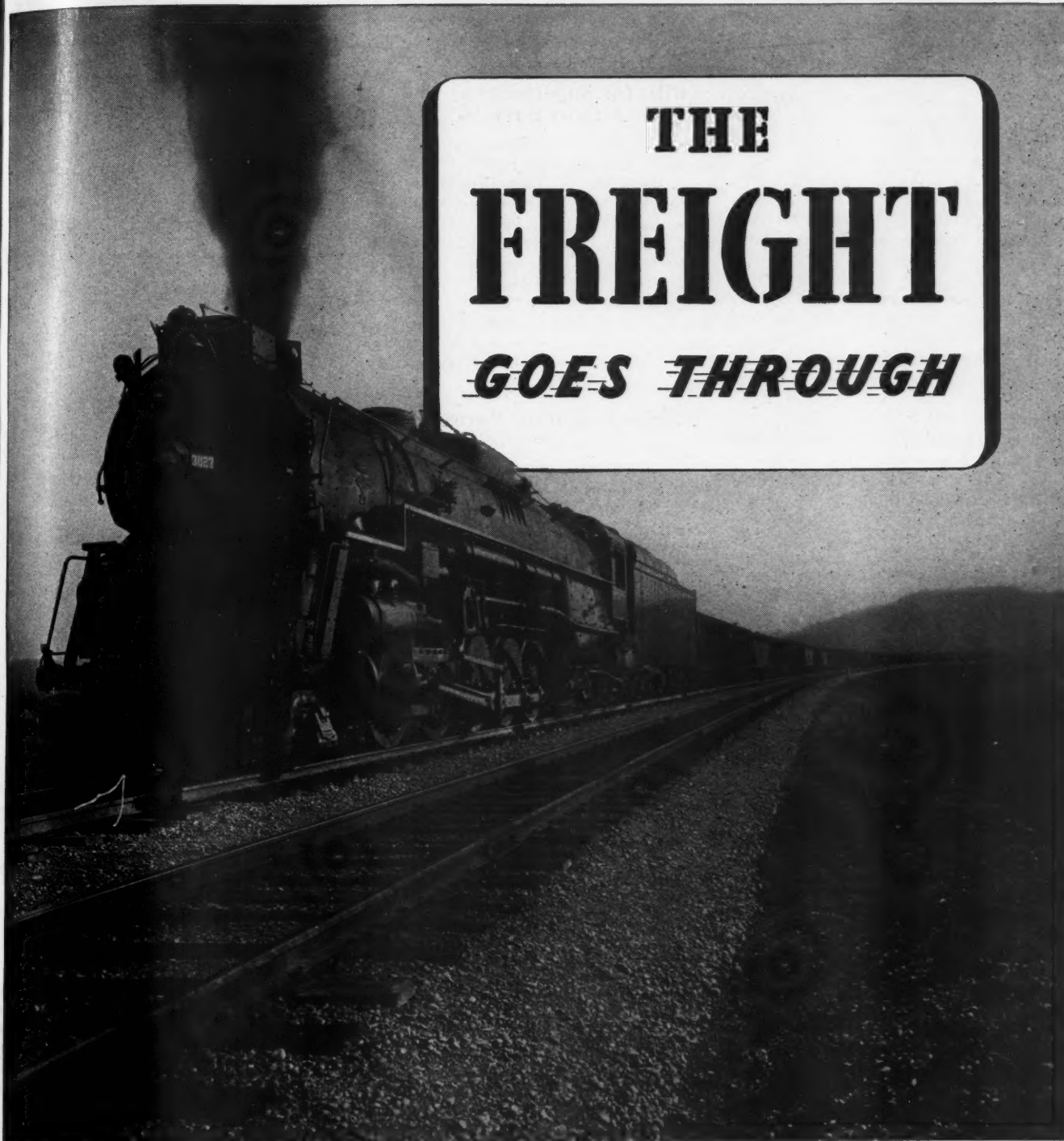
Commenting on railroad performance during the 12 months ended with February, the Bureau noted that the net ton-mile figure for that year—708 billion—was "a little over twice" the annual average carried in the 1925-1939 period. "This increase in freight service," the statement went on, "was performed with an increase in loaded car miles of only 63 per cent, an additional 37 per cent increase in loaded car miles having been avoided by the increase of 6.07 per cent in the average carload. In the interval the average load (net ton-miles per loaded car-mile) increased from 26.48 tons to 32.55 tons."

Likewise in the 12 months ended with February, the railroads as a whole are shown to have got their passenger service on a paying basis. Working out a "rough approximation" of the passenger-service operating ratio by separating expenses on the basis of train-hours, the Bureau arrived at a figure of 74.3. On the same basis the freight-service operating ratio for the 12 months is put at 57.5. "This result," the Bureau warns, "should not be taken as more than a rough approximation and applies to Class I railways as a whole. For individual railways these ratios show a wide variation."

Meanwhile the Bureau's comment had got under way with a review of March



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results, in which connection it was pointed out that the 31.3 per cent increase in freight revenues as compared with March, 1942, "overstates the improvement" because March, 1942, had five Sundays whereas March, this year, had four. Nevertheless March's freight revenue was "nearly equal to that of October, 1942." And its passenger revenue was 105.5 per cent in excess of March, 1942's, a greater rise than that of the two preceding months, the February increase being 95.9 per cent and January's 100.6 per cent.

The Bureau's trend table based on the 1935-1939 averages shows the March index of passenger revenues at 374, up 42.1 points from February's 331.9. Prior to February the trend of this index had been downward for a couple of months, falling from November's 335.6 to January's 325.2. Likewise the freight-revenue index for March was up to 226.9, a rise of 16.5 points above February's 210.4, which latter had recorded a drop of 3.2 points from January's 213.6.

The operating ratio for March was 59.4 per cent compared with 66.7 per cent in March, 1942. The Bureau noted that depreciation charges included in the March expenses amounted to \$26,545,985, an increase of 34.8 per cent above March, 1942, accruals. In addition there were March charges for amortization of defense projects totaling \$10,486,118, an increase of 91.8 per cent above the \$5,466,910 thus charged out in March, 1942.

Analyzing results for the 12 months ended March 31, the Bureau gives for that year net railway operating income figures before and after federal taxes—\$2,575,284,000 and \$1,600,319,000, respectively. "The 'rates of return' which these earnings represent," the Bureau went on, "depend on what value of the property is assumed. On 20 billion dollars, the rates are respectively 12.88 and 8.00 per cent; on 25 billion dollars they are 10.30 and 6.40 per cent."

In another computation, the Bureau undertook to indicate the amount which the railroads had available in the 12 months ended with February 28 for "such items as reserve funds, additions and betterments, dividends, debt reduction, etc." It puts the total at \$1,405,832,944, a figure which it built up by adding to the net income after all fixed charges and taxes (\$1,038,197,539) the \$367,635,405 in depreciation and amortization accruals charged to operating expenses.

The Bureau's analysis of employment statistics shows that in February the railroads paid for 22,293,283 hours of overtime, or 9.48 per cent of the straight time paid for. The corresponding percentage for February, 1942, was 4.88. Its further comment on these figures had this to say: "February had 24 working days. A person working eight hours on each of the 24 days would be at work 192 hours for the month. If all the working time is credited to the number of persons at work at middle of month, the average number of hours was 210, but if the total number of persons who received pay during the month is used as a divisor, the average number of hours is 189. This is not far from 192 and may be interpreted as meaning that

overtime work of some employees nearly offsets the loss of time represented by temporary or irregular work."

### Bills for Superhighway and Airport Surveys

Senator McClellan, Democrat of Arkansas, has introduced S.1079 to provide for a Public Roads Administration survey of the need for a system of express highways throughout the country. It is identical to H.R.2615, previously introduced in the House by Representative Randolph, Democrat, of West Virginia.

Meanwhile Mr. Randolph has also introduced H. R. 2661 to provide for a Civil Aeronautics Administration survey of the need for a system of airports throughout the country.

### Hearings on Rate Bureau Bill

Chairman Wheeler of the Senate committee on interstate commerce has set May 18 as the date for hearings before the full committee on S.942, the bill which he has introduced to give legal recognition to the activities of rail, motor, water carrier, and freight forwarder rate bureaus by placing them under the control and supervision of the Interstate Commerce Commission. Director Eastman of the Office of Defense Transportation is expected to be the first witness.

### A. A. R. Calling Western Cars for Grain Movement

In anticipation of heavy demands, for suitable cars to handle the crop movement this summer and fall, the Car Service Division of the Association of American Railroads is taking steps to build up the supply of available grain cars on Western roads.

Roads in the East and South were ordered to expedite the return to their home roads of all box cars suitable for grain loading owned by Western lines. This will be accomplished, so far as possible, by using these cars for the movement of freight consigned to points along their home lines. Where a load is not available, the cars are to be returned empty. At the same time, box cars owned by Eastern roads but now on Western lines are to be used for freight shipments to the East so far as possible in order to retain Western-owned box cars on their own lines.

In view of the fact that the movement of the winter wheat crop will begin early in June in the Southwestern states, especial attention is being given to the prompt return of box cars to railroads in that section of the country.

"It is conservatively estimated," Warren C. Kendall, chairman of the Car Service Division, said in a letter addressed to all railroads, "that Western roads will require the return of at least 20,000 box cars on or before July 1, to handle this season's grain crop and also the continued heavy movement of government grains during the remainder of the present crop year. A considerable number of Western box cars must be sent home empty at once in order to comply with this order and preference to these ownerships in such empty movements will be helpful."

While the winter wheat crop is expected

to be about 20 per cent less than last year, Mr. Kendall said, there has been a substantial increase in grain storage space at terminal markets which "will result in a heavy volume of grain from country stations immediately following the start of new harvest."

"Therefore, it is expected," Mr. Kendall added, "the Western grain loading roads this year will be called on to supply a much larger number of box cars to handle the crop than last year when storage facilities were largely occupied with old wheat."

### Study Wheat Movement

The problem of building a reserve of box cars in the Southwest to handle the wheat crop this year was considered at a meeting of representatives of the railroads and the Commodity Credit Corporation at Chicago on May 4. The assembly of cars is being complicated by the heavy movement of government wheat from storage and the need for cars to move feed wheat to the East and Southwest. It was decided to establish quotas to govern the number of cars the railroads will release for the reserve.

### I. C. C. Service Order

Service Order No. 122 of the Interstate Commerce Commission, effective until further order from May 10, directed the Illinois Central to return to the home road empty after being unloaded all coal cars—that is, hopper cars and gondolas with sides not less than 38 in. high—owned by the Virginian, Norfolk & Western, Chesapeake & Ohio, and Louisville & Nashville, using either the direct route or the route of loaded haul.

### V-Pennant Exemptions Continue

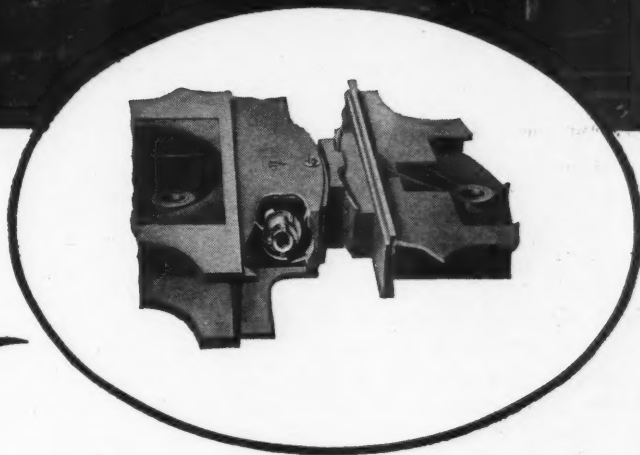
Pending completion of tire wear tests on trucks operating over the road at various speeds, the so-called V-pennant plan under which trucks making "emergency" deliveries for the Army, Navy, Maritime Commission, and War Shipping Administration may exceed the national 35 m. p. h. highway speed limit will continue in operation, Director Eastman of the Office of Defense Transportation announced May 11. The tests will be concluded about July 1, and provisions for exemptions through ODT certificates from the speed limit requirement which were set forth in ODT Order 23-2 A, as reported in *Railway Age* of February 27, page 443, will continue in effect until the results are determined.

### Money for Rivers and Harbors

The Senate on May 6 passed H.R.2346, the War Department Civil Functions Appropriation Bill for the fiscal year ending June 30, 1944. It carries an appropriation of \$35,700,000 for rivers and harbors work, but differs from the House version in that it leaves to the discretion of the Secretary of War the additional amount authorized to be spent from unobligated balances of previous appropriations for surveys with a view to building a backlog of projects to be undertaken in the post-war period.

The House version had limited the au-





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out the country, the Franklin Radial Buffer Type E-2 has provided an ideal, non-binding connection between engine and tender. Its smooth, powerful action deadens vibration and gives increased resistance to compression resulting in improved riding quality and safety of operation.



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thorized expenditures for such surveys to \$2,000,000, so the bill has gone to conference to iron out this and other variations. Meanwhile, as noted in the *Railway Age* of May 8, page 922, the Florida Canal is out, having been rejected by the Senate committee on appropriations. No attempt was made on the Senate floor to amend the bill for the purpose of authorizing the canal.

### Winners of National Safety Contest Announced

The National Safety Council has announced winners of its 1942 Railroad Employees' National Safety contest as follows:

Group A. 50,000,000 man-hours or more	Casualty Rate
Railroad	
Union Pacific	3.32
Chesapeake & Ohio	4.23
Norfolk & Western	4.26
Group B. 20,000,000 to 50,000,00 man-hours	
Michigan Central	3.94
Reading	7.07
Wabash	7.11
Group C. 8,000,000 to 20,000,000 man-hours	
Duluth, Missabe & Iron Range	2.55
Gulf, Mobile & Ohio	4.33
Pittsburgh & Lake Erie	6.01
Group D. 3,000,000 to 8,000,000 man-hours	
Bessemer & Lake Erie	4.41
Colorado & Southern	5.07
Maine Central	6.85
Group E. 1,000,000 to 3,000,000 man-hours	
Lake Superior & Ishpeming	0.00 (perfect)
Charleson & Western North Carolina	4.34
Ann Arbor	4.62
Group F. Less than 1,000,000 man-hours	
Nevada Northern	1.95
Colorado & Wyoming	5.33
Mississippi Central	7.13
Class I Switching and Terminal Railroads	
Group A. 1,500,000 or more man-hours	
Conemaugh & Black Lick	1.31
Cleveland Union Terminal	3.00
Ogden Union Ry. & Depot Co.	4.51
Group B. Less than 1,500,000 man-hours	
Birmingham Southern	7.68
Newburgh & South Shore	9.91
Boston Terminal	11.68
St. Paul Union Depot has a rate of 3.83 but because it won first place last year could not be awarded first place this year.	
Pullman Company Operating Zones	
New York	1.35
St. Louis	2.48
Chicago Central	2.62
Pullman Shops	

The six shops worked a total of 7,108,052 man-hours without a single lost time injury or death.

### First Mexican Railroad Workers Arrive in U. S.

Following completion of an agreement between the Mexican Labor Ministry and the U. S. State Department for the importation of 6,000 Mexicans to become track workers on American railroads, the first consignment of 750 men was delivered to the Southern Pacific at Nogales, Ariz., last week from Mexico City. A similar consignment is scheduled to be delivered to the Atchison, Topeka & Santa Fe at El Paso, Tex., on May 16.

Actual recruiting of the Mexican workers, their transportation from Mexico to points in the United States, and other details relative to the undertaking are being handled by the War Manpower Commission and its subsidiary organization, the United States Employment Service, as well as the Railroad Retirement Board. Many of the details of the plan, to alleviate the decreasing manpower situation of the railroads, will follow closely those of a similar plan evolved sometime ago to ease a shortage of workers in agriculture.

According to officials of the Railroad Retirement Board, workers imported from Mexico under the existing agreement will

be assigned to Southwestern and Pacific Coast railroads for working periods of six months duration, at an hourly wage of 40 cents.

### Freight Car Loading

Loadings of revenue freight for the week ended May 8 totaled 816,551 cars, the Association of American Railroads announced on May 13. This was an increase of 27,768 cars, or 3.5 per cent, above the preceding week, a decrease of 22,735 cars, or 2.7 per cent, below the corresponding week last year, and a decrease of 20,598 cars, or 2.5 per cent, below the comparable 1941 week.

Loading of revenue freight for the week ended May 1 totaled 788,783 cars and the summary for that week, compiled by the Car Service Division, A. A. R., follows:

#### Revenue Freight Car Loadings

For the week ended Saturday, May 1			
District	1943	1942	1941
Eastern	151,275	169,865	177,757
Allegheny	171,585	191,049	177,479
Poconohontas	47,800	57,423	35,384
Southern	116,579	129,808	111,089
Northwestern	108,950	132,840	135,058
Central Western	119,163	113,251	109,247
Southwestern	73,431	64,675	48,385
Total Western Districts	301,544	310,766	292,690
Total All Roads	788,783	858,911	794,299
Commodities			
Grain and grain products	46,597	36,193	33,854
Live stock	15,713	13,885	12,836
Coal	134,264	169,424	92,786
Coke	13,653	14,049	10,273
Forest products	43,748	50,406	42,674
Ore	53,391	78,997	79,271
Merchandise l.c.l.	97,574	112,736	163,691
Miscellaneous	383,843	383,221	358,915
May 1	788,783	858,911	794,299
April 24	794,194	861,357	721,627
April 17	780,908	846,505	708,793
April 10	789,018	814,096	679,808
April 3	772,133	829,038	683,402
Cumulative Total, 18 Weeks	13,584,951	14,366,109	12,974,914

IN CANADA.—Car loadings for the week ended May 1 totaled 63,974 as compared with 60,454 for the previous week and 66,126 for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
May 1, 1943	63,974	37,572
April 24, 1943	60,454	38,072
April 17, 1943	66,912	38,860
May 2, 1942	66,126	32,985
Cumulative Totals for Canada:		
May 1, 1943	1,098,030	660,255
May 2, 1942	1,111,423	575,440
May 3, 1941	992,330	517,152

### Justice Department Protests Refiners Transport Order

The Department of Justice has petitioned the Interstate Commerce Commission to reconsider the majority report and order of the commission's Division 4 authorizing the purchase of operating rights and property of Marshall Transport Company by Refiners Transport & Terminal Corporation, a Union Tank Car Company subsidiary, reported in *Railway Age* of April 17, page 804. Commissioner Mahaffie's dissent from the division's majority's finding stressed his opinion that Union should have been a party to the application, and the Department of Justice petition contended that the majority had viewed the law too narrowly in finding otherwise.

The petition renewed the argument advanced by protestants in the proceedings, including the Department of Justice, that Union is a carrier by railroad affiliated with other carriers by railroad, and asked for a reopening of the case by the commission to examine the issues further.

### Rochester's Subway Is Part of "Steam-Railroad System"

The subway division of the Rochester Transit Corporation, a 9.2-mile electrically operated railroad built in the abandoned bed of the old Erie Canal within the city of Rochester, N. Y., is "operated as a part of a general steam-railroad system of transportation," Division 3 of the Interstate Commerce Commission has found, and is therefore not exempt from the provisions of the Railroad Retirement Act, the Railroad Unemployment Insurance Act, and the Carriers Taxing Act of 1937.

The division had "no difficulty in reaching the conclusion," its report indicated, in spite of the fact that the corporation contended that the subway line is not a separate entity, but is part of its entire urban transit system, to which its freight operations, in which it acts as agent for the roads serving Rochester, "are merely incidental."

Citing certain precedents for its conclusion, the division pointed out that the subway line's freight revenue per mile of road in 1941, which was over \$7,000, exceeded similar revenue of a majority of electric railways as to which it had reached a similar decision.

### I. C. C. Reports on Collision at 63rd Street, Chicago

A rear-end collision at 9.10 p. m. on March 27 at the Illinois Central's 63rd Street Station in Chicago, in which a standing 18-car passenger train was struck by an 11-car passenger train moving at a speed of 8 to 12 m.p.h., resulting in the injury of 132 passengers, 7 dining car employees, 1 club car attendant, 4 porters and 1 train service employee, was attributed in an Interstate Commerce Commission report, prepared under the direction of Commissioner Patterson, to failure to operate the following train in accordance with signal indications and failure to enforce the flagging rule.

Specifically, the rules involved allowed the following train to pass automatic block signals displaying a stop-and-proceed aspect, without stopping, but so operated that it could be stopped short of a preceding train, while the flagman of the train standing at the station was not required under the road's general regulations to go more than 30 ft. to the rear of the train, which, the commission's report said, "practically nullifies" the application of the flagging rule at such locations.

The flagman was looking ahead to determine when the train was ready to proceed without being recalled by whistle signal, the report observed, pointing out that the "unnecessary use" of the engine whistle is prohibited within the Chicago corporate limits. As it was customary to protect trains standing at stations with a lighted fusee "only in an emergency," the



# KEEP

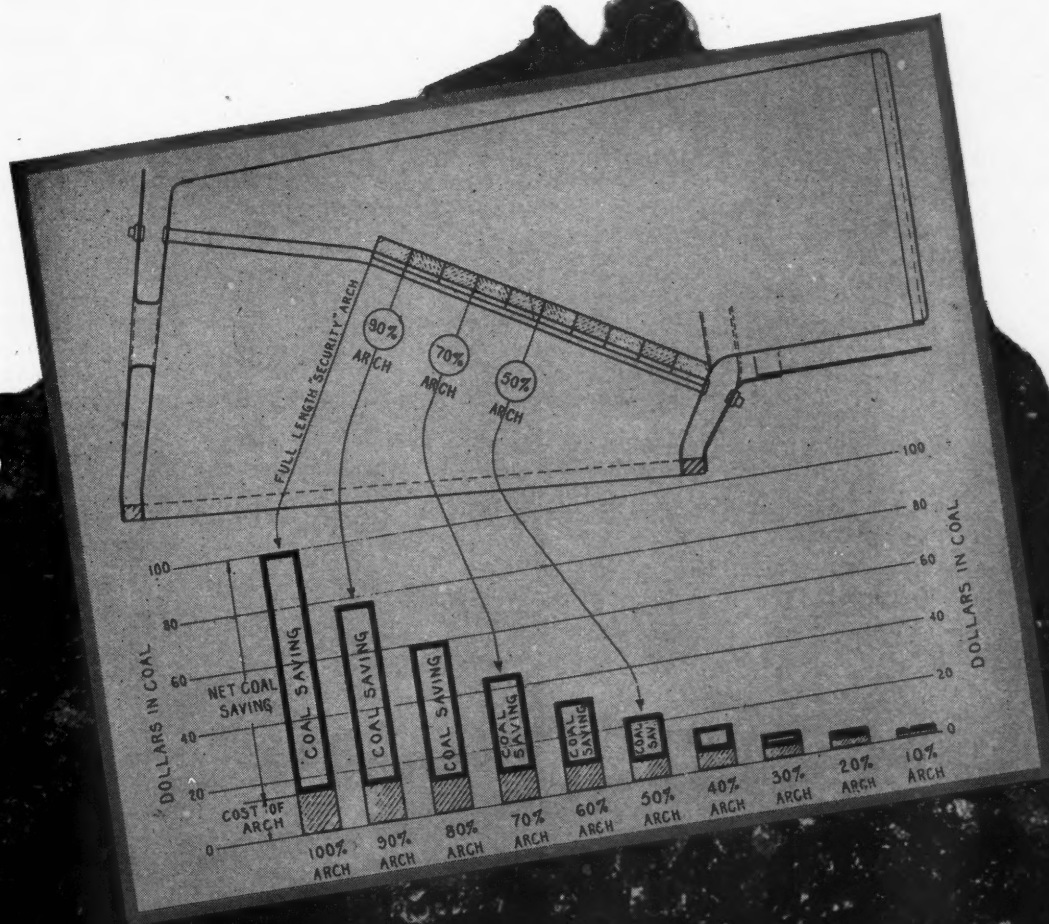
# FUEL-BURNING EFFICIENCY AT A MAXIMUM

Every railroad man is conscious of the wartime importance of each pound of coal.

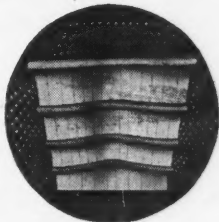
To make it yield its utmost in steam production is imperative. This is one of the functions of the Security Sectional Arch.

But only a complete arch can achieve the maximum in results. Hence the importance of having full length arches in all locomotives.

This is one sure way of stepping up fuel-burning efficiency.



**HARBISON-WALKER  
REFRACTORIES CO.**  
*Refractory Specialists*



**AMERICAN ARCH CO.  
INCORPORATED**  
60 EAST 42nd STREET, NEW YORK, N. Y.  
*Locomotive Combustion  
Specialists*

flagman depended on the automatic signals for protection, the report indicated. In this circumstance, and in the failure of the following train to reduce speed sufficiently to meet the requirements of the rule, the commission found the cause of the collision.

### Emergency Board Unable to Settle Non-Op Case

The wage dispute between the railroads and the 15 non-operating unions moved closer to President Roosevelt's desk on May 7, when the emergency board announced that its efforts to settle the dispute had been unsuccessful. The announcement was made after the board had met representatives of the unions and the railroads in separate sessions on May 5 and 6, to determine whether the parties would agree to mediation. At the same time the

board announced that it would digest the testimony and exhibits and prepare a report and recommendation to the President. The board did not announce when its report would be completed.

Hearings on the demands of the non-operating employees for a wage increase of 20 cents an hour, a minimum of 70 cents an hour and a closed shop were begun on March 1, after attempts at mediation had failed. During the hearings, more than 6,000 pages of testimony were taken and more than 200 exhibits were introduced.

As the hearings drew to a close, the legality of the demands in the light of the Stabilization Act became more perplexing. The railroads have contended throughout the hearings that the stabilization act and subsequent executive orders freezing prices and wages prohibit the raising of railroad

wages. At the same time they have contended that the Railway Labor Act prohibits them from granting the closed shop demanded by the unions and cite as an authority the opinion of the attorney general of the United States.

The unions on the other hand, have contended that the stabilization act and the executive orders do not replace the Railway Labor Act and that in addition the former can be so interpreted as to permit wage increases to railway workers. They have also advocated that the President exercise his war powers to scrap that part of the Labor Act which prohibits the closed shop and have hinted that the "no-strike" agreement with the President does not apply to a strike against the provision of the Railway Labor Act which makes the closed shop on railroads illegal.

Throughout the hearings, both parties have been without an official interpretation of the application to railroad employees of the stabilization act and the executive orders. The parties received no opinion from Economic Stabilization Director James F. Byrnes during the hearings or even when the miners, by striking, created a national issue and an upward revision of the Little Steel Formula was advocated.

## SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 132 Reports (Form IBS) Representing 136 Steam Railways

(Switching and Terminal Companies Not Included)

Income Items	All Class I Railways			
	For the month of February		For the two months of	
	1943	1942	1943	1942
1. Net railway operating income .....	\$106,073,070	\$64,298,732	\$211,412,730	\$131,110,286
2. Other income .....	10,855,484	11,035,747	23,877,408	23,669,474
3. Total income .....	116,928,554	75,334,479	235,290,138	154,779,760
4. Miscellaneous deductions from income..	2,139,276	2,316,769	4,259,707	4,747,318
5. Income available for fixed charges .....	114,789,278	73,017,710	231,030,431	150,032,442
6. Fixed charges:				
6-01. Rent for leased roads and equip-				
ment .....	14,220,057	12,233,181	28,488,870	25,816,179
6-02. Interest deductions <sup>1</sup> .....	36,392,647	36,958,221	72,973,097	74,077,317
6-03. Other deductions .....	126,872	117,195	248,879	234,369
6-04. Total fixed charges .....	50,739,576	49,308,597	101,710,846	100,127,865
7. Income after fixed charges .....	64,049,702	23,709,113	129,319,585	49,904,577
8. Contingent charges .....	2,230,894	2,193,328	4,520,947	4,442,823
9. Net income .....	61,818,808	21,515,785	124,798,638	45,461,754
10. Depreciation (Way and structures and				
Equipment) .....	26,359,546	18,837,537	52,905,837	36,590,228
11. Amortization of defense projects .....	10,478,983	4,041,608	19,860,870	7,903,306
12. Federal income taxes .....	95,175,428	26,433,490	183,118,739	46,247,116
13. Dividend appropriations:				
13-01. On common stock .....	15,334,988	12,738,588	17,694,988	15,098,588
13-02. On preferred stock .....	2,600,500	2,583,473	5,211,921	5,069,870
Ratio of income to fixed charges (Item			2.27	1.50
5 to 6-04) .....	2.26	1.48		
All Class I Railways				
Selected Asset and Liability Items	Balance at end of February			
	1943	1942		
20. Investments in stocks, bonds, etc., other than those of affiliated				
companies (Total, Account 707) .....	\$544,723,587	\$466,729,588		
21. Cash .....	1,055,752,249	746,705,113		
22. Temporary cash investments .....	977,041,762	136,101,795		
23. Special deposits .....	135,136,475	184,636,206		
24. Loans and bills receivable .....	335,345	1,265,746		
25. Traffic and car-service balances—Dr. ....	43,762,871	29,556,147		
26. Net balance receivable from agents and conductors .....	173,368,242	86,660,107		
27. Miscellaneous accounts receivable .....	481,391,059	234,481,525		
28. Materials and supplies .....	507,244,457	499,808,867		
29. Interest and dividends receivable .....	17,813,901	17,723,327		
30. Rents receivable .....	1,193,107	1,132,869		
31. Other current assets .....	13,888,620	24,780,496		
32. Total current assets (items 21 to 31) .....	3,406,928,088	1,962,852,198		
40. Funded debt maturing within 6 months <sup>2</sup> .....	\$125,958,650	\$99,711,707		
41. Loans and bills payable <sup>3</sup> .....	15,927,203	42,402,142		
42. Traffic and car-service balances—Cr. ....	136,598,371	62,237,076		
43. Audited accounts and wages payable .....	398,010,037	328,351,826		
44. Miscellaneous accounts payable .....	79,813,916	50,210,659		
45. Interest matured unpaid .....	48,286,334	56,809,751		
46. Dividends matured unpaid .....	3,034,506	4,879,905		
47. Unmatured interest accrued .....	77,803,959	83,867,557		
48. Unmatured dividends declared .....	30,732,927	17,777,638		
49. Unmatured rents accrued .....	23,783,949	22,572,658		
50. Accrued tax liability .....	1,160,009,172	371,283,317		
51. Other current liabilities .....	63,545,249	55,228,892		
52. Total current liabilities (items 41 to 51) .....	2,037,545,623	1,095,621,421		
53. Analysis of accrued tax liability:				
53-01. U. S. Government taxes .....	1,032,870,142	255,285,842		
53-02. Other than U. S. Government taxes .....	127,139,030	115,997,475		

<sup>1</sup> Represents accruals, including the amount in default.

<sup>2</sup> Includes payments of principal of long-term debt (other than long-term debt in default) which will become due within six months after close of month of report.

<sup>3</sup> Includes obligations which mature not more than 2 years after date of issue.

### Rhode Island Commutation Fares

In conformity with the Interstate Commerce Commission's order of April 6 revoking the increase in interstate commutation fares authorized in 1942 under Ex Parte 148 proceedings, the commission has ordered that equivalent increases in Rhode Island commutation fares, ordered in its 28827 proceedings, likewise be revoked as of May 15, pending further investigation of the need for such increases.

### Careful Crossing Campaign Poster Is Ready

The Safety Section of the Association of American Railroads has just issued its annual careful crossing campaign poster prepared for use during 1943. The poster is 14 in. x 22 in. and orders may be placed with the secretary of the section, J. C. Caviston, at 30 Vesey street, New York.

During 1942, according to figures furnished by the Safety Section, casualties resulting from grade crossing accidents showed an increase of 2.0 per cent in fatalities and a decrease of 5.5 per cent in injuries as compared with the previous year.

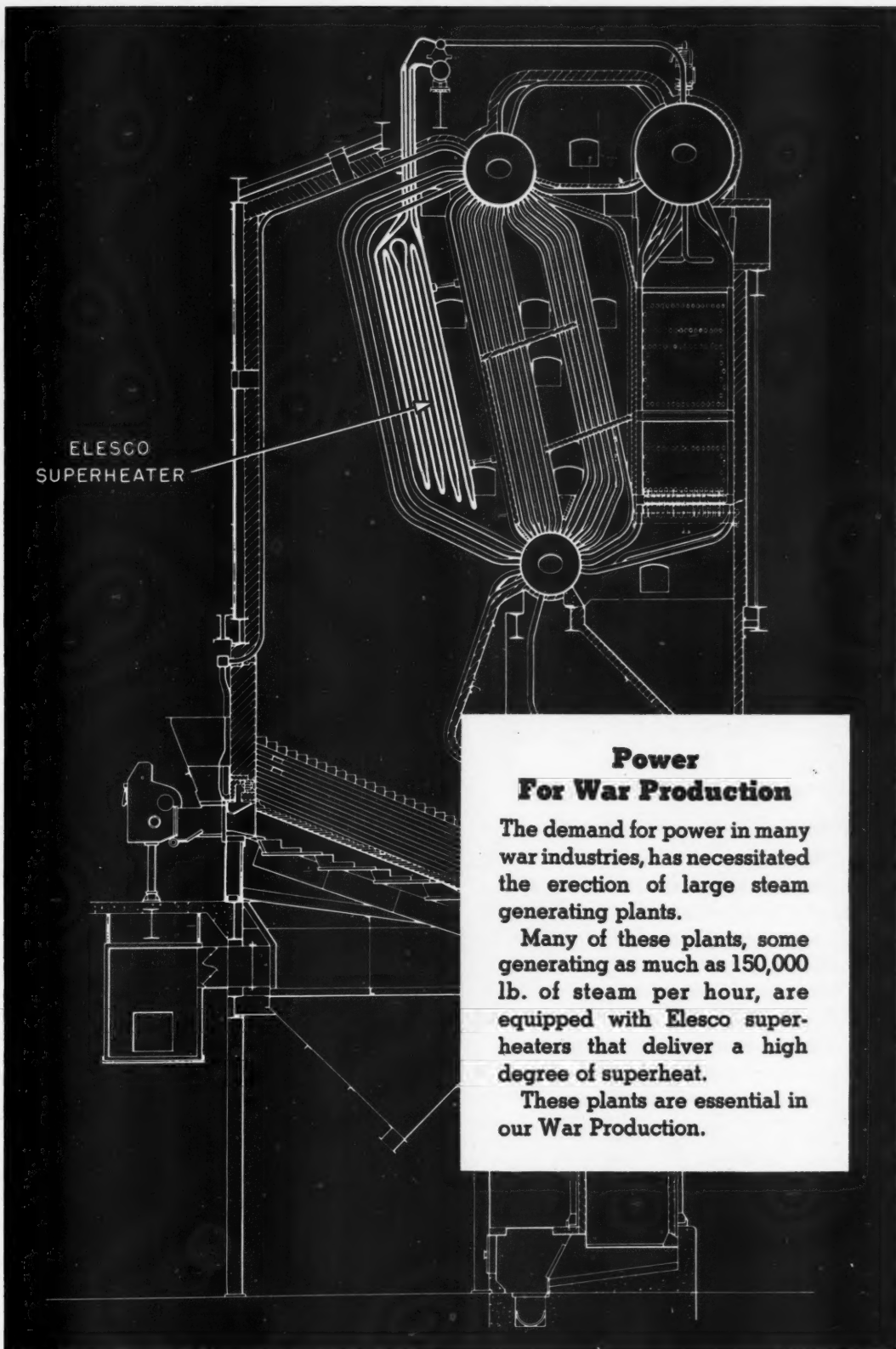
### Atomic-Hydrogen Arc Welding Films

A new all-color sound movie "The Inside of Atomic-Hydrogen Arc Welding" has been announced by the General Electric Company to help in the training of men and women welding operators using this process. The movie is in two parts and is available to industrial welding schools, and to other public and private groups.

Produced under the direction of the General Electric welding laboratories, the new film follows the successful pattern of "The Inside of Arc Welding" films released last year.

Each of the two parts of the new film





### Power For War Production

The demand for power in many war industries, has necessitated the erection of large steam generating plants.

Many of these plants, some generating as much as 150,000 lb. of steam per hour, are equipped with Elesco superheaters that deliver a high degree of superheat.

These plants are essential in our War Production.

*Keep Abreast of Superheater Development with Elesco*

A-1578

SUPERHEATERS • FEEDWATER HEATERS  
AMERICAN THROTTLERS • STEAM DRYERS  
EXHAUST STEAM INJECTORS • PYROMETERS

THE  
**SUPERHEATER**  
C O M P A N Y

Representative of  
AMERICAN THROTTLE COMPANY, INC.  
60 East 42nd Street, NEW YORK  
122 S. Michigan Blvd., CHICAGO

Montreal, Canada  
THE SUPERHEATER COMPANY, LTD.

employs colorful charts, animation, demonstrations by expert operators and close-ups of the atomic-hydrogen arc in action, as well as examples of good and bad welding. The films are ten minutes in duration and can be used on sound-equipped 16-mm. projectors only.

Part one describes and illustrates the fundamentals of atomic-hydrogen welding. It shows how to regulate the welding current and the hydrogen supply; how to adjust the electrode holder and the tungsten electrodes; and how to recognize and correct improper adjustment.

Part two shows proper technique for principal types of joints; how to control the molten pool; and how to recognize and correct improper welding conditions. Particular emphasis is given these four factors—current setting, speed of travel, size of arc, and the contact of the act with the work.

The film may be obtained for single showings, or bought at print cost, by writing General Electric's Visual Instruction Section, Schenectady, New York, or the nearest General Electric office or welding distributor.

### March Accident Statistics

The Interstate Commerce Commission on May 8 made public its Bureau of Transport Economics and Statistics' preliminary summary of steam railway accidents for March and this year's first three months. The compilation, which is subject to revision, follows:

Item	Month of March		3 months ended with March	
	1943	1942	1943	1942
Number of train accidents*	1,510	1,058	4,427	3,108
Number of casualties in train, train-service and nontrain accidents:				
Trespassers:				
Killed .....	147	122	357	349
Injured .....	112	108	302	317
Passengers on trains:				
(a) In train accidents*				
Killed .....	1	4	3	9
Injured .....	170	96	409	303
(b) In train-service accidents				
Killed .....	4	3	13	8
Injured .....	180	174	605	500
Travelers not on trains:				
Killed .....	1	.....	3	2
Injured .....	95	68	307	188
Employees on duty:				
Killed .....	69	65	264	222
Injured .....	3,747	2,373	11,053	7,174
All other nontrespassers:†				
Killed .....	212	174	570	603
Injured .....	629	568	1,900	2,026
Total—All classes of persons:				
Killed .....	434	368	1,210	1,193
Injured .....	4,933	3,387	14,576	10,508

\* Train accidents (mostly collisions and derailments) are distinguished from train-service accidents by the fact that the former cause damage of more than \$150 to railway property.

† Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties for all classes of persons, including both trespassers and nontrespassers, were as follows:

Persons:				
Killed .....	193	154	515	555
Injured .....	370	414	1,158	1,566

### Representation of Employees

The Brotherhood of Railroad Trainmen has supplanted the Order of Railway Conductors as the Railway Labor Act representative of Western Pacific road conduc-

tors, according to results of a recent election certified by the National Mediation Board. The vote was 80 to 76.

Meanwhile the B. of R. T. broke even in recent contests with the Railroad Yardmasters of America, winning the right to represent yardmasters of the Nashville, Chattanooga & St. Louis while the R. Y. of A. won out on the Nashville Terminals. In another case involving representation of New Orleans & Northeastern yardmasters, the B. of R. T. withdrew its application for an election and the proceeding has been closed by N. M. B.

## Supply Trade

C. M. Wright has been appointed chief engineer of the Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill., to succeed T. A. Collison, retired.

Wayne D. Dukette, for the last seven years assistant sales manager of the Ryerson Chicago Steel Service plant, has been appointed manager of the railroad sales



Wayne D. Dukette

department of Joseph T. Ryerson and Son, Inc., Chicago. He succeeds J. P. Moses, who will continue in the railroad sales organization in an advisory capacity.

W. W. Castleberry, formerly acting service manager of the Jacksonville, Fla., office of the Graybar Electric Company, has been appointed service manager, with the same headquarters.

Roy E. Smith, division manager of Armco Drainage & Metal Products, Inc., Middletown, Ohio, has resigned to become sales manager of the Kelly O'Leary Steel Works.

The Firth-Sterling Steel Company was presented with the Army-Navy "E" burgee at its McKeesport, Pa., plant on May 7. The award was made by Lt. Col. Robert C. Downie, Deputy District Chief, Pittsburgh (Pa.) Ordnance district, and was accepted on behalf of the company by L. Gerald Firth, president.

Richard W. Torbert, assistant chief engineer of the Oxweld Railroad Service Company, Chicago, has been ap-

pointed assistant to vice-president, engineering, of that company, and will have active charge of service operations in maintenance-of-way and structures work. Mr. Torbert was born in Ocean City, N. J., on December 1, 1902, and graduated



R. W. Torbert

in civil engineering from the University of Delaware in 1926. He entered railroad service in the engineering department of the Reading at Harrisburg, Pa., and was promoted to assistant supervisor of track in November, 1926. He was advanced to supervisor of track in April, 1934, and continued in that capacity at Philadelphia, Pa., and West Trenton, N. J., until December, 1941, when he joined the Oxweld Railroad Service Company as assistant chief engineer.

The Okonite Company, with executive offices in Passaic, N. J., has opened a new district sales office at 904 Pere Marquette building, New Orleans, La. The new office will be in charge of W. D. Stroud, sales engineer, and will include territory in Louisiana, Southern Mississippi and Northwest Florida.

J. B. Tytus, vice-president in charge of operations of the American Rolling Mill Company, has been elected vice-president in charge of technical development and F. E. Vigor, who has been assistant director of the Steel division of the War Production Board has been elected vice-president in charge of manufacturing and mining operations.

Mr. Tytus, who graduated from Yale in 1897, started to work in the Armco sheet mills in 1904 as a doubler. He became superintendent of the Zanesville Armco plant in 1906, and superintendent of the Middletown sheet mill department in 1909. He was appointed assistant general superintendent in 1918. During World War I, Mr. Tytus conducted a series of experiments on the continuous rolling of iron and steel sheets, and in 1922, he built a continuous sheet rolling mill in Ashland, Ky. He was elected vice-president in 1927.

Mr. Vigor joined the Armco organization in 1910 as a traffic clerk, and was general manager of traffic when he was appointed assistant general manager of the Ashland division in 1928. He was ap-



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pointed manager at Ashland in 1929. In 1941 Mr. Vigor went to Washington as a member of the Iron and Steel section of the Office of Production Management, eventually becoming assistant director of the Steel division of the War Production Board. He recently returned to again take up his responsibilities on the staff of the Armco general management.

## OBITUARY

**F. O. Brazier**, general manager of railway sales of the Murphy Varnish Company, died on May 1. He was 69 years of age.

## Abandonments

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**ILLINOIS CENTRAL.**—This company has applied to the Interstate Commerce Commission for authority to abandon a 0.1-mile segment of an interchange track within the corporate limits of Chatsworth, Ill., and in addition to abandon operation over a 0.03-mile segment of the same track owned by the Toledo, Peoria & Western.

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**ILLINOIS CENTRAL.**—Division 4 of the Interstate Commerce Commission has denied the application of this company and the Dubuque & Sioux City, lessor, for authority to abandon operation of and to abandon, respectively a branch from Stacyville Junction, Iowa, to Stacyville, 7.85 miles, without prejudice to a renewal of the application if, at the end of this year, "anticipated traffic" has not materialized in sufficient volume to warrant continued operation. Opposition to abandonment was based, among other grounds, on the opinion that "the existing road system would be unable to withstand the heavy traffic to which it would be subjected if the branch is abandoned."

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**PERE MARQUETTE.**—This company has applied to the Interstate Commerce Commission for authority to abandon portions of two branch lines, one from Remus, Mich., to Big Rapids, 19.02 miles, and one from Lakeview, Mich., to Howard City, 10.72 miles.

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**SHEFFIELD & TIONESTA.**—In a proposed report in Finance Docket 14099 Examiner Lucian Jordan has recommended that the Interstate Commerce Commission approve this road's application for authority to abandon its entire line from Mayburg, Pa., to Sheffield, 19.1 miles. Abandonment was opposed by the War Production Board on the ground that the line affords the only practical transportation outlet for a plant producing charcoal essential for the war effort, but the examiner found that, while abandonment would result in "inconvenience" to the plant, its operations had resulted in a loss for several years and there is no prospect of sufficient revenues to meet the necessary costs of future operations.

## Equipment and Supplies

### FREIGHT CARS

**THE DENVER & RIO GRANDE WESTERN** has placed an order for 200 53-ft. 6-in. flat cars of 50 tons' capacity with the Mount Vernon Car Company, pending approval by the War Production Board.

### SIGNALING

**THE UNION SWITCH & SIGNAL Co.** is installing complete drawbridge protection for the double-track main line crossing of the Atlantic Coast Line over the Pinopolis Tail Canal of the Santee-Copper Power and Navigation Project near Moncks Corner, S. C. This work is being performed for the South Carolina Public Service Authority and involves electro-pneumatic home and dwarf signals with necessary rail locks and drawbridge controllers, bridge lock layouts, smashboards, etc.—all controlled from a five-lever Style "TC" table interlocking machine equipped with a track model. The rail lock and bridge circuit controller layouts are operated by Style A-5 electro-pneumatic movements, with these layouts as well as the bridge locks being controlled by Style "CP" cut-off valves.

## Construction

**CHESAPEAKE & OHIO.**—This company has awarded a contract to Albert Bros., Salem, Va., for grade and line revision at Shadwell, Va., at a probable cost of \$133,102.

**PENNSYLVANIA.**—This road has awarded a contract to the Ross and White Company, Chicago, for the installation, complete on their foundations, of four N. & W. type electric cinder plants, two 5-ton sand towers and two heavy-duty Red Devil locomotive coalers at Fort Wayne, Ind., and one 5-ton sand tower and one Red Devil coaler at Crestline, Ohio.

**CHESAPEAKE & OHIO.**—This company has authorized projects involving the rebuilding of Bridge No. 5129 over Big Sandy river at Kenova, W. Va., and the installation of traffic signals on eastward and westward main tracks from Ft. Lee, Va., to Richmond, both projects to be carried out by company forces at probable expenditures of \$1,351,000 and \$127,400, respectively. The road is also preparing detail data to request bids for the extension of yard tracks and the construction of additional tracks at Peach Creek, W. Va., with the cost of this work estimated at \$234,500.

**CHICAGO, AURORA & ELGIN.**—Federal Judge Philip L. Sullivan has authorized this road to spend approximately \$500,000 for improvements to the line's tracks from

Chicago to Aurora, Ill. The project will include the replacement of 80-lb. rail with 100-lb. rail, reballasting of the track, and reconditioning of the road bed, ditches and bridges between the two points. So far, the War Production Board has allocated to the road 500 tons of new rails, which it is expected will be augmented by additional quarterly allowances.

**ILLINOIS CENTRAL.**—This company has awarded a contract to the Bates & Rogers Construction Corporation, Chicago, for the construction of bridge piers at Redwood, Miss., at an approximate expenditure of \$300,000.

**PENNSYLVANIA.**—The board of directors of this road have authorized the construction of a new electrically-operated float bridge and additional track facilities at its Greenville (N. J.) yard, at a cost of \$830,000. The improvement, which will include the laying of 7,660 ft. of additional track and the shifting of 12,770 ft. of track and also a number of turnouts, will increase the track capacity of the yard supporting the floating operations, from 502 cars to 591 cars.

## Financial

**BALTIMORE & OHIO.**—*Trackage Rights.*—This company has applied to the Interstate Commerce Commission for approval of a modification of the terms of the agreement under which it operates under trackage rights over the Pittsburgh & Lake Erie from McKeesport, Pa., to New Castle Junction, 58.1 miles.

**BALTIMORE & OHIO.**—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to assume liability for \$33,500,000 of its Series M 3 per cent serial equipment trust certificates, a portion of a proposed issue of \$10,760,000 to be applied to the purchase, as available, of certain equipment "together with such additional substitute or replacing railroad equipment as may be acquired." Arrangements have been completed to purchase, if available, 3 Diesel-electric 5400 h. p. freight locomotives and 8 Diesel-electric 1000 h. p. switching locomotives from the Electro-Motive Division, General Motors Corporation; 7 Diesel-electric 1000 h. p. switching locomotives from the American Locomotive Company; 20 Mallet freight locomotives from Baldwin Locomotive Works; and 965 composite type 50-ton hopper cars from the Bethlehem Steel Company.

**CANADIAN PACIFIC.**—*Executive Committee.*—D. C. Coleman (president and chairman of the board); W. M. Neal (vice-president); Ross H. McMaster, Morris W. Wilson, L. J. Belnap, and Aime Geofrion, K.C., have been appointed to the executive committee of this road, and all directors were re-elected at a directors meeting held in Montreal on May 5.

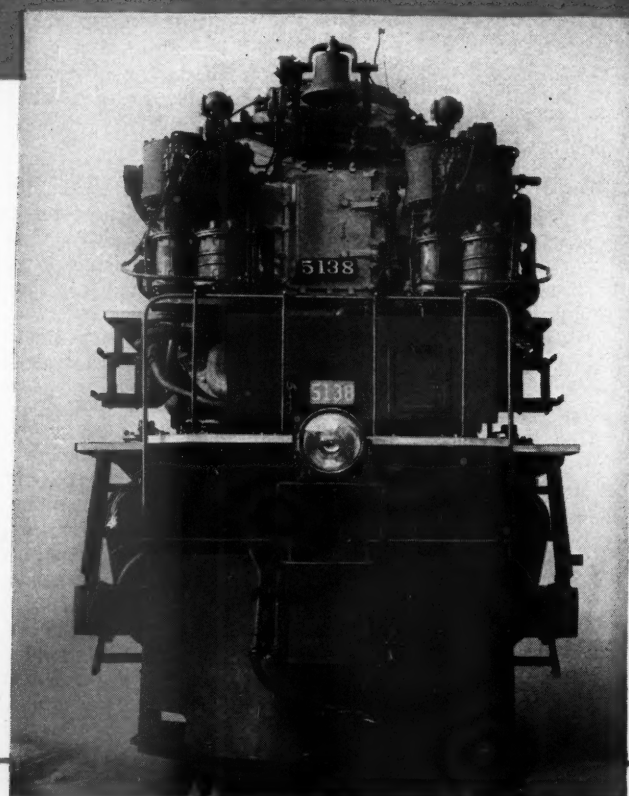
**CHESAPEAKE & OHIO.**—*Annual Report.*—The 1942 annual report of this road

# READY FOR THE **BIG** ON THE



## Locomotive Characteristics

Weight on Drivers	440,000 Lb.
Weight of Engine	644,000 Lb.
Cylinders (Four)	23 x 32 Ins.
Diameter of Drivers	70 Ins.
Boiler Pressure	260 Lb.
Tractive Power	106,900 Lb.
Tender Capacity—Fuel	27 Tons
Tender Capacity—Water	25,000 Gals.



★ ★ ★ ★ ★ ★ ★ ★  
FOR VICTORY BUY U. S.  
WAR BONDS AND STAMPS



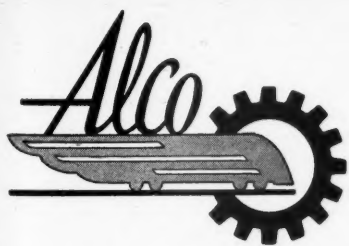
# JOB AHEAD

*"Main Street of the Northwest"*



Twelve new 4-6-6-4 type single expansion articulated high-speed freight locomotives have been delivered recently by Alco to the Northern Pacific—"The Main Street of the Northwest."

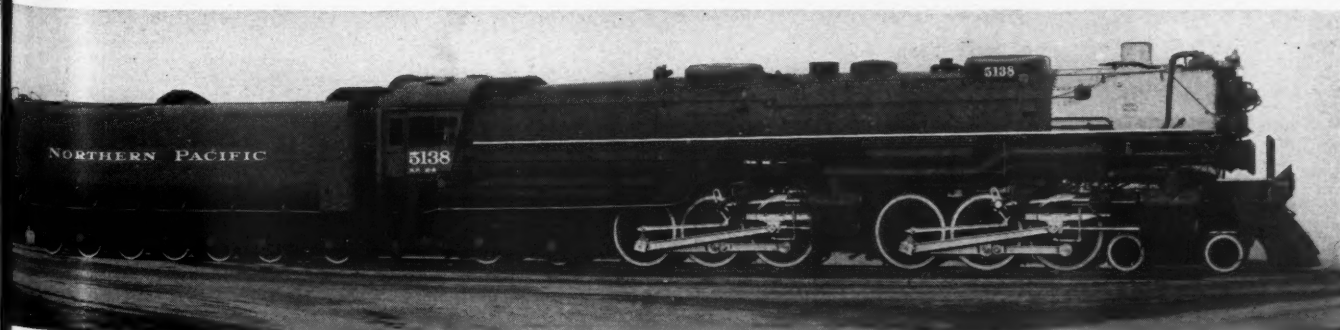
Alco has delivered 40 of these modern high-powered 4-6-6-4 type locomotives to this road since 1936.



## AMERICAN LOCOMOTIVE

MANUFACTURERS OF MOBILE POWER

STEAM, DIESEL AND ELECTRIC LOCOMOTIVES, MARINE DIESELS, TANKS, GUN CARRIAGES & OTHER ORDNANCE



shows a net income, after interest and other charges, of \$33,153,437, as compared with a net income of \$44,939,744 in 1941. Selected items from the income statement follow:

	1942	Increase or Decrease Compared with 1941
Average Mileage Operated	3,114.53	-7.23
RAILWAY OPERATING REVENUES	\$181,809,762	+\$31,572,428
Maintenance of way and structures	15,850,251	+1,629,224
Maintenance of equipment	30,547,841	+5,024,392
Transportation	41,728,214	+7,547,153
TOTAL OPERATING EXPENSES	95,415,056	+15,175,757
Operating ratio	52.48	-0.93
NET REVENUE FROM OPERATIONS	86,394,706	+16,396,671
Railway tax accruals	49,998,352	+30,319,548
RAILWAY OPERATING INCOME	36,396,354	-13,922,877
Equipment rents—Net Cr.	4,706,015	+2,200,048
Joint facility rents—Net Dr.	1,458,784	+192,773
NET RAILWAY OPERATING INCOME	39,643,584	-11,915,602
Other income	1,138,116	-52,523
TOTAL INCOME	41,459,694	-11,564,524
Rent for leased roads and equipment	49,563	+516
Interest on debt	8,008,505	+203,676
NET INCOME	33,153,437	-11,786,307
Disposition of net income:		
Income applied to sinking and other reserve funds	512,086	-8,497
Income balance transferred to profit and loss	\$32,641,351	-\$11,777,811

**CHESAPEAKE & OHIO.—Equipment Trust.**—Division 4 of the Interstate Commerce Commission has authorized this company to assume liability for \$5,200,000 of 1¾ per cent serial equipment trust certificates sold through competitive bidding to Halsey, Stuart & Company and associates at 99.26, the proceeds of which are to be applied to the purchase of 2,380 50-ton composite type hopper cars.

In view of the fact that the company has cash on hand adequate to finance this equipment purchase, the division authorized the security issue, its report indicates, on the basis of an agreement that the road will expend during 1943 for long term debt retirement a sum equal to the face value of the new issue, in addition to the amount of such debt maturing during the year or normally to be retired through sinking fund operations. This procedure will result in reducing fixed charges and at the same time permit the company "to maintain a strong liquid position necessary both because of heavy tax liabilities and because of immediate problems and the uncertainties of the post-war era," the division's majority said.

The company has informed the commission that it expects to continue dividends in 1943 at the rate paid in 1941 and 1942, that is, 14 per cent on the common stock and 4 per cent on the Series A preference stock, the effect of which, in connection with the debt retirements contemplated, would apparently be to prevent a net increase in working capital during the year.

Commissioner Miller dissented from the

decision of the division's majority, Commissioners Porter and Mahaffie, to the extent that approval of the issue was tied to the company's agreement to use an equivalent amount of cash for debt retirement. Pointing out that the company is "one of our strongest railroad systems," and that its "management of its funded debt has been conservative," Mr. Porter said that, although his dissent in Ex Parte 148 last month indicated his belief in the desirability of reducing funded debt, he did not agree that the commission "should assume to control the discretion of the management respecting the financing of its requirements." He would, therefore, approve the application without "exactng the agreement regarding debt reduction."

**GREAT NORTHERN.—Promissory Note.**—Division 4 of the Interstate Commerce Commission has authorized this company to issue a promissory note for \$1,265,680 in evidence of, but not in payment for, the unpaid balance due on a conditional sales contract for 500 75-ton ore cars, the manufacturer's rights in which have been sold to the Northwestern National Bank, Minneapolis, Minn., and the First National Bank, St. Paul, Minn., on terms resulting in a 1.87 per cent interest rate. Financing in this form, under which the principal and interest payments are reduced monthly, was said by the company to be more economical than under an equipment trust requiring semi-annual payments. The issue was approved, even though the company had ample cash funds to purchase the equipment, the division indicated, because it is proposed to employ available cash to retire 4 per cent bonds, and so reduce the company's outstanding indebtedness.

**LOUISIANA & ARKANSAS.—Sale of Branch Line.**—This company has entered into an agreement to sell to the South Shore, an intrastate carrier, for \$65,000 its 12.1-mile branch line from Paloma, La., to Maryland, a point within the switching limits of Baton Rouge, upon approval by the Interstate Commerce Commission of its application for authority to abandon the line. The South Shore will move gravel and sand over the line to its connection with the L. & A. at Maryland.

**NORTHERN PACIFIC.—Annual Report.**—The 1942 annual report of this road shows a net income, after interest and other charges, of \$16,303,917, as compared with a net income of \$7,757,019 in 1941. Selected items from the income statement follow:

	1942	Increase or Decrease Compared with 1941
Average Mileage Operated	6,883.96	+124.11
RAILWAY OPERATING REVENUES	\$119,310,557	+\$33,964,229
Maintenance of way and structures	14,988,084	+4,606,559
Maintenance of equipment	21,494,530	+5,127,583
Transportation—rail line	34,040,267	+6,532,146
TOTAL OPERATING EXPENSES	77,229,102	+17,319,382

NET REVENUE FROM OPERATIONS	42,081,455	+16,644,848
Railway tax accruals	18,919,788	+9,652,096
RAILWAY OPERATING INCOME	23,161,667	+6,992,732
Equipment rents—Net Cr.	1,938,892	+344,270
Joint facility rents—Net Cr.	2,362,546	+203,304
NET RAILWAY OPERATING INCOME	27,463,104	+7,540,326
Total other income	3,808,654	+1,062,381
TOTAL INCOME	31,271,758	+8,602,707
Rent for leased roads and equipment	58,612	+5,518
Interest on funded debt—fixed interest	14,423,673	+9,606
TOTAL FIXED CHARGES	14,648,882	+74,594
NET INCOME	\$16,303,917	+\$8,546,899

**ST. LOUIS-SAN FRANCISCO.—Annual Report.**—The 1942 annual report of this road shows a net income, after interest and other charges, of \$14,767,239, as compared with a net deficit of \$223,663 in 1941. Selected items from the income statement follow:

	1942	Increase or Decrease Compared with 1941
Average Mileage Operated	4,998.74	-47.79
RAILWAY OPERATING REVENUES	\$90,079,600	+\$28,244,396
Maintenance of way and structures	8,336,819	+846,118
Maintenance of equipment	12,166,830	+3,255,969
Transportation	28,418,405	+6,495,248
TOTAL OPERATING EXPENSES	57,003,300	+11,786,456
Operating ratio	63.28	-9.84
NET REVENUE FROM OPERATIONS	33,076,600	+16,457,940
Railway tax accruals	5,405,514	+1,127,469
Equipment rents—Net	210,679	+391,494
Joint facility rents—Net	186,486	-37,289
NET RAILWAY OPERATING INCOME	27,273,921	+14,976,265
Non-operating income	191,876	-61,400
GROSS INCOME	27,465,797	+14,914,866
Rent for leased roads and equipment	23,638	-117
Interest on funded debt	12,470,463	-79,395
TOTAL FIXED CHARGES	12,503,006	-201,778
BALANCE	\$14,767,239	+\$14,990,903

**TENNESSEE.—Equipment Notes.**—At this company's request, Division 4 of the Interstate Commerce Commission has dismissed its application for authority to issue \$30,000 of serial 4 per cent equipment notes.

## Average Prices Stocks and Bonds

	Last May 11	Last week	Last year
Average price of 20 representative railway stocks..	37.59	37.86	24.77
Average price of 20 representative railway bonds..	78.28	78.55	67.43

## Dividends Declared

Illinois Central.—(LL), \$2.00, semi-annually, payable July 1 to holders of record June 11.  
Montgomery & Erie.—17½¢, semi-annually, payable May 10 to holders of record April 30.  
Philadelphia, Germantown & Norris.—\$1.50, quarterly, payable June 4 to holders of record May 20.  
Pittsburgh, Bessemer & Lake Erie.—6 Per Cent Preferred, \$1.50, semi-annually, payable June 1 to holders of record May 15.  
Pittsburgh, Youngstown & Ashtabula.—Preferred, \$1.75, quarterly, payable June 1 to holders of record May 20.  
Rutland & Whitehall.—\$1.05, payable May 15, to holders of record May 1.  
West Jersey & Seashore.—6 Per Cent Special Guaranteed, \$1.50, semi-annually, payable June 1 to holders of record May 15.



# Railway Officers

## EXECUTIVE

**P. N. Myers**, treasurer of the McCloud River, has been elected vice-president and general manager, with headquarters as before at McCloud, Cal.

**D. C. Coleman**, president of the Canadian Pacific, with headquarters at Montreal, Que., has also been elected chairman of the board of that road to succeed Sir Edward Beatty, who died on March 23.

**R. J. McDermott**, whose promotion to vice-president and general manager of the Missouri Pacific Transportation Company (motor transport subsidiary of the Missouri Pacific) was reported in the *Railway Age* of May 8, was born on October 6, 1893, at St. Louis, and entered railway service with the Missouri Pacific on June 1, 1908, serving as a messenger-clerk in the yard office and car accountant's office until November 11, 1917. From that date until September 30, 1918, Mr. McDermott served as a clerk in various departments. On October 1, 1918, he was promoted to freight car dis-



**R. J. McDermott**

tributor and on January 3, 1920, he was appointed traveling car agent. On July 1, 1923, Mr. McDermott was further advanced to chief freight car distributor and on August 11, 1924, he was appointed chief clerk in the operating-transportation department. From October 16, 1926, to April 30, 1929, he served as a supervisor, then being promoted to assistant to the general superintendent of transportation. In June, 1935, Mr. McDermott was advanced to assistant general superintendent of transportation, with headquarters at St. Louis, Mo., holding that position until his new appointment, effective May 1.

**P. J. Neff**, whose promotion to senior executive assistant in charge of the Gulf Coast Lines of the Missouri Pacific and the International-Great Northern (Texas lines of the Missouri Pacific) and executive assistant of the Missouri Pacific, with headquarters at Houston, Tex., was reported in the *Railway Age* of May 8, was

born at St. Louis, Mo., on July 14, 1884, and graduated in civil engineering at the University of Kansas in 1906. He obtained his first railway experience in February, 1907, as a rodman on the St. Louis-San Francisco at Joplin, Mo. Later he served as transitman and assistant engineer on the Frisco at Springfield, Mo., as assistant



**P. J. Neff**

engineer and engineer of construction at Memphis, Tenn., St. Louis and Springfield, and as district engineer at the latter point. From September, 1918, to December, 1919, he was corporate chief engineer of the Frisco, during federal control of the railroads. From January, 1920, to December, 1922, he served successively as general manager of the Wichita Falls, Ranger & Fort Worth and the Wichita Falls & Southern at Ranger, Tex., and as chief engineer of the Texas lines of the Frisco at Fort Worth, Tex. Mr. Neff then became assistant to the president of the International-Great Northern at Houston, and in February, 1925, he was appointed assistant executive vice-president at Houston. In June, 1926, he was appointed general superintendent of the Eastern district of the Missouri Pacific at St. Louis, becoming assistant to the president on September 1, 1928. In the latter capacity, and as vice-president and general manager of the Missouri Pacific Transportation Company, he planned the organization of the railroad's motor coach subsidiary. In May, 1931, he was promoted to assistant vice-president of the Missouri Pacific lines in charge of passenger traffic, and in February, 1934, he was advanced to assistant chief traffic officer-passenger, which position he held, in addition to that of vice-president and general manager of the Missouri Pacific Transportation Company, at the time of his new appointment, effective May 1.

## OPERATING

**Frank E. Kalbaugh**, trainmaster of the Southern Pacific at San Luis Obispo, has been promoted to assistant superintendent of transportation, with headquarters at San Francisco, Cal., succeeding **S. L. Dolan**, whose appointment as assistant superintendent of the Shasta division was reported in the *Railway Age* of April 24.

**J. F. Morrison**, supervisor of mail and express of the Boston & Albany at Boston,

Mass., has been appointed trainmaster at Beacon Park (Allston, Mass.), succeeding **F. F. Williams**, deceased, and **H. W. Bethe** has been appointed supervisor of mail and express at Boston, succeeding Mr. Morrison.

## FINANCIAL, LEGAL AND ACCOUNTING

**J. C. Orlowski**, assistant traffic manager of the McCloud River at San Francisco, Cal., has been elected secretary and assistant treasurer, and traffic manager, with headquarters at McCloud, Cal. In the latter position Mr. Orlowski succeeds **Dwight M. Swope**, whose death on April 5 is reported elsewhere in these columns.

## TRAFFIC

**O. K. Sanders**, district freight representative of the Baltimore & Ohio at Detroit, Mich., has been promoted to division freight agent, with headquarters at Toledo, Ohio, succeeding **Arthur Maedel**, who has retired.

**Perry W. Wilson**, whose promotion to assistant general passenger agent of the St. Louis-San Francisco at St. Louis,



**Perry W. Wilson**

Mo., was reported in the *Railway Age* of May 8, was born at Lupus, Mo., on November 7, 1895, and entered railway service in February, 1918, as a ticket agent of the Kansas City Terminal. On August 1, 1921, he became assistant city ticket agent of the Frisco at Kansas City, Mo., subsequently serving as city ticket agent, chief clerk and city passenger agent, with the same headquarters. On March 1, 1937, Mr. Wilson was advanced to district passenger agent at Chicago, and on February 1, 1942, he was appointed division passenger agent, with headquarters at Kansas City, holding that position until his new promotion, effective May 1.

**Harry L. Schaeffer**, whose promotion to general passenger traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of May 8, was born at St. Louis on March 12, 1902, and attended Brown's Business College and Benton College of



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Law at St. Louis, graduating from the latter in 1925. He entered railway service in April, 1916, as a messenger boy on the Missouri Pacific at St. Louis and was later advanced to office boy and clerk-



**Harry L. Schaeffer**

stenographer at that point. In August, 1919, he went with the Missouri-Kansas-Texas as a clerk-stenographer at Wichita Falls, Tex., and four months later he was promoted to secretary to the superintendent at Sedalia, Mo. In March, 1920, Mr. Schaeffer returned to the Missouri Pacific as secretary to the district engineer at St. Louis, later serving as secretary to the contract attorney, and assistant secretary to the general manager. In December, 1923, he was advanced to chief clerk to the passenger traffic manager and in August, 1927, he was promoted to assistant general passenger agent at St. Louis. Mr. Schaeffer was transferred to Kansas City, Mo., in February, 1935, and in August, 1941, he was advanced to assistant passenger traffic manager, with headquarters at St. Louis, holding that position until his new appointment, effective May 1.

## ENGINEERING AND SIGNALING

**C. K. Hoffmeister**, assistant engineer, water supply, of the Texas & Pacific, has been promoted to engineer, water supply, with headquarters at Dallas, Tex., succeeding **R. L. Holmes**, whose death on April 26 was reported in the *Railway Age* of May 8.

**J. R. Scofield**, assistant engineer in the district engineer's office of the New York Central at Cleveland, Ohio, has been promoted to division engineer of the Illinois division, with headquarters at Mattoon, Ill., succeeding **H. E. Woodburn** who has been appointed superintendent of the Dayton (Ohio) Union Terminal, replacing **F. E. Jones**, who has retired.

## MECHANICAL

**Nicholas McLean Trapnell**, assistant superintendent motive power of the Chesapeake & Ohio, has been promoted to superintendent motive power, with headquarters as before at Richmond, Va. Mr. Trapnell, who was born on December 30, 1900, at

Elizabeth, N. J., was graduated from Stevens Preparatory school, Hoboken, N. J., and studied mechanical engineering at the Stevens Institute of Technology. He entered railway service as a locomotive fireman on the New York division of the Pennsylvania during his summer vacation of 1916, and was employed by the same road in a like capacity during his summer vacation periods of 1917 and 1918. In July, 1919, he became a machinist helper of the Coal & Coke (now Baltimore & Ohio) at Gassaway, W. Va., and in February, 1921, he joined the staff of the Barber Steamship Company as marine engineer. In April, 1922, he was appointed machinist, Meadow shops, New York division, of the Pennsylvania, and in September, 1924, he entered the employ of the Weston Electrical Instrument Company as draftsman at Newark, N. J., becoming mechanical engineer of the latter firm in 1926. In December, 1928, Mr. Trapnell was appointed assistant engineer, operating department, of the Chesapeake & Ohio, at Richmond, becoming special engineer on



**Nicholas McLean Trapnell**

the staff of the vice-president and general manager in April, 1933. He was appointed mechanical engineer in August, 1936, and in June, 1938, he became assistant to superintendent motive power. In October, 1938, Mr. Trapnell was advanced to assistant superintendent motive power and remaining in that position until he was appointed superintendent motive power on May 1.

## SPECIAL

**William H. Hobbs**, whose appointment as director of research of the Missouri Pacific, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of May 1, was born at Gatesville, Tex., on February 12, 1892, and graduated in science and civil engineering from the Oklahoma Agricultural and Mechanical College in 1912. He entered railway service on July 1, 1912, as a rodman of the St. Louis, Iron Mountain & Southern (now the Missouri Pacific), subsequently serving at various points of the road as instrumentman and assistant engineer until 1917 when he joined the U. S. Army. From March, 1919, to January, 1925, Mr.

Hobbs served the Missouri Pacific as assistant engineer at Monroe, La., and Kansas City, Mo., and in the chief engineer's office at St. Louis. In February, 1925, he was promoted to engineer of design, with



**William H. Hobbs**

headquarters at St. Louis, and in January, 1937, he was appointed assistant engineer to the chief executive officer, holding that position until his new promotion, effective April 1.

## PURCHASES AND STORES

**R. E. Martinez** has been appointed material agent for the National Railways of Mexico with offices at 120 Wall street, New York.

## OBITUARY

**Dwight M. Swope**, president and traffic manager of the McCloud River, died on April 5, at San Francisco, Cal.

**Charles F. M. Tinling**, who retired in 1936 as supervisor of demurrage and storage of the Illinois Central, died on May 11, at his home in Riverside, Ill.

**George S. Patterson**, who resigned as general solicitor of the Pennsylvania, eastern lines, on December 1, 1919, died on May 7, at a hospital in Philadelphia, Pa., at the age of 74. Mr. Patterson was chairman of the committee of counsel appointed by the presidents of 38 eastern railroads to handle the presentation of the five and fifteen per cent rate cases instituted before the Interstate Commerce Commission in 1913 and 1917.

**Ralph D. Van Duzer**, general land and tax agent of the Lehigh Valley, with headquarters at New York, died May 5. Mr. Van Duzer was born on December 30, 1884, at Middletown, N. Y., and received a B. S. degree in civil engineering from Rutgers college in 1907. He entered railway service in 1909 as district real estate agent of the Lehigh Valley, and served in this capacity until 1914, when he was appointed assistant general land and tax agent. Mr. Van Duzer became general land and tax agent of the Lehigh Valley at New York in 1918.



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# Freight Operating Statistics of Large Steam Railways—Selected Items

Region, road, and year	Miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Road locos. on line					
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross excl. locos. & tenders	Net-rev. and non-rev.	Serviceable		B. O.	Per cent B. O.		
									Unstored	Stored				
New England Region:														
Boston & Albany.....	1943	362	147,235	177,945	33,800	3,566	64.0	241,167	106,753	82	..	9	9.9	
	1942	362	170,923	189,934	20,924	4,054	63.9	250,662	97,600	69	..	14	16.9	
Boston & Maine.....	1943	1,812	397,392	479,190	52,922	12,597	64.5	862,221	387,529	143	..	29	16.9	
	1942	1,853	341,612	394,760	37,253	12,270	69.4	729,175	298,428	148	4	22	12.6	
N. Y., New H. & Hartf.†....	1943	1,816	479,437	599,906	59,278	16,677	65.8	1,074,383	475,182	220	10	38	14.9	
	1942	1,816	453,588	578,209	52,836	16,771	68.7	946,810	385,176	212	..	53	17.4	
Great Lakes Region:														
Delaware & Hudson.....	1943	848	319,520	389,882	38,091	11,846	65.1	869,974	456,562	151	34	38	17.0	
	1942	849	315,163	374,682	40,333	11,573	66.0	783,738	386,494	142	22	67	29.0	
Del., Lack. & Western.....	1943	982	367,866	449,388	80,887	15,261	67.3	1,039,741	500,566	160	6	29	14.9	
	1942	982	362,350	420,132	60,699	14,332	70.3	881,952	390,878	139	23	34	17.3	
Erie .....	1943	2,242	944,349	1,038,485	79,767	40,612	66.8	2,710,739	1,233,876	319	3	81	20.1	
	1942	2,251	829,915	875,922	51,639	36,126	68.0	2,210,584	913,530	286	31	95	23.0	
Grand Trunk Western.....	1943	1,026	280,625	287,873	2,856	8,088	64.8	551,419	250,146	69	2	13	15.5	
	1942	1,026	252,758	255,623	2,004	7,254	65.8	445,652	173,439	70	1	19	21.1	
Lehigh Valley .....	1943	1,248	433,776	474,011	66,716	17,505	62.3	1,252,085	605,323	140	..	17	10.8	
	1942	1,251	382,502	415,053	66,705	15,173	68.2	976,205	448,993	125	7	41	23.7	
New York Central.....	1943	10,396	3,520,892	3,832,905	246,966	127,577	62.2	9,217,840	4,387,640	1,205	5	216	15.1	
	1942	10,497	3,226,170	3,475,693	214,131	111,929	61.8	7,685,603	3,406,082	1,106	68	211	15.2	
New York, Chi. & St. L.....	1943	1,657	816,253	825,374	10,434	29,523	64.4	2,027,222	942,877	166	..	12	6.7	
	1942	1,657	729,205	745,043	10,420	25,679	66.1	1,630,210	687,909	162	..	10	5.8	
Pere Marquette .....	1943	1,998	466,231	485,840	11,372	13,445	64.0	942,835	447,141	141	1	20	12.3	
	1942	2,021	369,285	380,617	7,867	10,300	65.9	668,154	287,425	141	4	18	11.0	
Pitts. & Lake Erie.....	1943	233	91,510	96,012	16	3,744	61.1	334,662	195,599	44	1	11	19.6	
	1942	232	91,931	95,114	29	3,622	63.4	303,146	173,468	46	..	14	23.3	
Wabash .....	1943	2,381	713,163	745,037	16,790	24,935	69.2	1,652,109	777,851	178	9	35	15.8	
	1942	2,382	638,892	660,220	13,445	21,656	69.4	1,310,053	537,710	156	29	69	27.2	
Central Eastern Region:														
Baltimore & Ohio.....	1943	6,116	2,322,508	2,861,096	328,575	73,645	62.7	5,380,404	2,634,656	909	2	222	19.6	
	1942	6,238	2,069,028	2,592,653	276,459	64,922	63.6	4,463,168	2,065,220	901	32	199	17.6	
Central of New Jersey†.....	1943	657	250,554	292,011	57,560	7,929	61.7	591,893	307,775	130	2	22	14.3	
	1942	661	223,739	254,816	48,022	6,698	60.2	485,536	239,309	100	19	28	19.0	
Chicago & Eastern Ill.....	1943	912	262,861	277,906	10,067	8,039	59.5	583,176	267,559	65	..	10	13.3	
	1942	925	178,510	179,498	3,204	4,678	68.1	297,914	136,180	63	4	20	23.0	
Elgin, Joliet & Eastern.....	1943	392	137,218	139,706	1,952	3,574	62.4	288,526	154,672	67	..	9	11.8	
	1942	392	139,542	141,312	1,478	3,776	61.3	291,603	147,529	69	..	10	12.7	
Long Island .....	1943	374	31,325	32,757	18,945	334	55.7	25,355	10,784	44	..	4	8.3	
	1942	374	27,096	28,350	19,836	294	54.0	22,151	8,820	42	2	9	17.0	
Pennsylvania System .....	1943	9,938	4,269,195	5,027,329	696,431	150,594	61.8	10,999,682	5,309,147	1,960	..	179	8.4	
	1942	9,946	3,955,608	4,648,055	558,480	146,547	63.9	9,861,279	4,493,350	1,863	71	180	8.5	
Reading .....	1943	1,419	595,843	665,621	80,367	18,388	61.7	1,461,652	790,657	279	8	36	11.1	
	1942	1,430	541,549	598,937	75,788	16,146	63.5	1,200,038	622,865	267	21	46	13.8	
Pocahontas Region:														
Chesapeake & Ohio .....	1943	3,034	1,017,864	1,098,027	48,673	43,134	56.2	3,744,796	2,098,330	438	2	70	13.7	
	1942	3,053	855,772	909,673	38,925	36,044	57.2	2,949,913	1,619,418	398	37	70	13.9	
Norfolk & Western.....	1943	2,134	791,502	870,119	75,125	34,088	59.0	3,017,368	1,679,835	310	6	22	6.5	
	1942	2,159	727,045	767,796	47,998	30,510	58.0	2,560,054	1,361,136	301	15	17	5.1	
Southern Region:														
Atlantic Coast Line.....	1943	4,982	1,034,199	1,063,191	15,702	27,807	63.0	1,901,638	851,528	379	4	21	5.2	
	1942	4,986	874,521	891,316	13,248	21,718	62.5	1,343,055	517,557	313	..	29	8.5	
Central of Georgia†.....	1943	1,783	300,570	306,272	5,984	7,042	71.3	468,499	224,898	109	..	9	7.6	
	1942	1,783	272,881	276,714	4,384	6,194	72.2	370,561	157,989	109	..	11	9.2	
Gulf, Mobile & Ohio.....	1943	1,962	372,579	467,139	5,117	12,140	69.3	826,769	412,442	115	..	7	5.7	
	1942	1,959	255,701	309,285	1,594	8,419	70.6	509,137	225,799	94	2	14	12.7	
Illinois Central (incl. Yazoo & Miss. V.).....	1943	6,349	1,773,717	1,796,126	35,657	62,487	61.8	4,554,834	2,167,720	624	1	62	9.0	
	1942	6,500	1,647,201	1,656,428	31,022	52,065	62.9	3,549,311	1,594,341	614	13	80	11.3	
Louisville & Nashville.....	1943	4,735	1,502,887	1,627,743	43,279	36,565	62.9	2,690,067	1,392,495	428	4	54	11.1	
	1942	4,789	1,361,187	1,465,341	38,717	32,440	61.8	2,290,769	1,111,907	381	18	61	13.3	
Seaboard Air Line*.....	1943	4,171	937,005	1,034,858	13,885	24,630	68.4	1,677,331	785,077	319	..	23	6.7	
	1942	4,293	806,269	846,201	7,177	20,705	67.3	1,276,277	527,299	280	..	24	7.9	
Southern .....	1943	6,478	1,997,766	2,042,729	30,898	43,186	68.9	2,836,708	1,359,261	607	..	69	10.2	
	1942	6,469	1,738,414	1,773,225	26,151	39,687	67.7	2,414,282	1,050,148	575	..	91	13.7	
Northwestern Region:														
Chi. & North Western†.....	1943	8,098	1,005,422	1,050,602	23,324	28,804	64.0	2,035,275	907,326	378	20	97	19.6	
	1942	8,262	976,689	1,003,195	20,879	29,318	64.6	1,929,141	776,927	335	39	174	31.8	
Chicago Great Western.....	1943	1,447	281,478	286,996	15,478	8,446	70.7	566,088	263,329	78	..	4	4.9	
	1942	1,447	270,781	276,069	6,905	8,130	65.5	516,630	204,331	73	1	12	14.0	
Chi., Milw., St. P. & Pac.†.....	1943	10,783	1,506,740	1,610,687	73,975	45,125	67.5	3,135,633	1,532,906	517	29	65	10.6	
	1942	10,813	1,396,812	1,469,597	60,567	43,721	63.5	2,922,318	1,285,332	477	64	99	15.5	
Chi., St. P., Minneap. & Om.....	1943	1,618	220,809	243,411	13,992	5,176	64.5	368,519	170,825	104	17	8	6.2	
	1942	1,618	221,104	237,422	11,373	5,522	68.3	349,845	149,979	114	8	11	8.3	
Duluth, Missabe & I. R.....	1943	545	28,038	28,313	371	426	56.9	28,403	12,787	27	19	13	22.0	
	1942	542	23,735	23,871	458	418	57.7	26,517	11,381	27	24	29	36.3	
Great Northern .....	1943	8,022	1,053,727	1,056,807	39,050	35,903	71.2	2,483,547	1,223,376	406	18	61	12.6	
	1942	7,982	1,015,087	1,011,611	32,465	34,551	65.9	2,295,309	982,889	364	53	82	16.4	
Min., St. P. & S. St. M.†.....	1943	4,258	450,600	460,177	7,618	10,060	66.7	731,082	354,308	128	3	5	3.7	
	1942	4,258	441,199	451,620	8,732	11,086	66.4	706,880	311,611	136	2	7	4.8	
Northern Pacific .....	1943	6,571	909,738	981,215	78,684	33,049	77.0	2,214,803	1,170,807	383	6	52	11.8	



## for the Month of February 1943 Compared with February 1942

Region, road, and year	Freight cars on line			Per Cent B. O.	G.t.m. per train-hr. excl. locos. and tenders	G.t.m. per train-mi. excl. locos. and tenders	Net ton-mi. per train-mile	Net ton-mi. per l'd. car-mile	Net ton-mi. per car-day	Car miles per car-day	Net daily ton-mi. per road-mi.	Coal lb. per 1000 g.t.m. inc. loco.	Mi. per loco. per day	
	Home	Foreign	Total											
New England Region:														
Boston & Albany.....	1943	358	5,705	6,063	0.4	23,205	1,647	729	29.9	669	34.9	10,532	183	91.6
	1942	501	5,656	6,157	.2	24,240	1,484	578	24.1	602	39.1	9,629	164	94.7
Boston & Maine.....	1943	2,753	12,660	15,413	1.5	28,842	2,181	980	30.8	920	46.4	7,638	114	113.9
	1942	3,399	11,497	14,896	2.3	29,574	2,143	877	24.3	746	44.2	5,752	107	94.8
N. Y., New H. & Hartf.†.....	1943	3,486	22,766	26,252	1.3	30,781	2,277	1,007	28.5	685	36.5	9,345	112	93.5
	1942	4,340	21,589	25,929	2.1	29,746	2,120	863	23.0	533	33.8	7,575	113	92.6
Great Lakes Region:														
Delaware & Hudson.....	1943	4,192	5,267	9,459	4.0	43,207	2,734	1,435	38.5	1,682	67.0	19,229	116	71.7
	1942	5,772	5,739	11,511	5.2	38,853	2,502	1,234	33.4	1,197	54.3	16,258	115	66.3
Del., Lack. & Western.....	1943	6,212	12,727	18,939	2.6	39,733	2,880	1,387	32.8	956	43.3	18,205	135	105.0
	1942	7,284	10,052	17,336	3.7	40,752	2,449	1,086	27.3	773	40.3	14,216	134	91.0
Erie.....	1943	13,348	25,695	39,043	2.2	46,085	2,889	1,315	30.4	1,174	57.9	19,655	105	108.5
	1942	13,344	22,195	35,539	2.1	46,428	2,682	1,109	25.3	915	53.2	14,494	106	87.9
Grand Trunk Western.....	1943	2,617	7,767	10,384	3.1	39,975	1,978	897	30.9	859	42.9	8,707	95	133.7
	1942	4,044	7,884	11,928	3.3	34,432	1,775	691	23.9	546	34.7	6,037	101	112.0
Lehigh Valley.....	1943	7,634	20,403	28,037	1.4	44,094	3,000	1,451	34.6	763	35.4	17,323	126	129.9
	1942	7,989	16,962	24,951	1.0	43,973	2,606	1,199	29.6	659	32.6	12,818	122	101.4
New York Central.....	1943	50,505	97,459	147,964	2.9	38,701	2,659	1,266	34.4	1,056	49.4	15,073	110	113.2
	1942	64,446	77,215	141,661	4.2	39,395	2,407	1,067	30.4	840	44.7	11,589	107	105.8
New York, Chi. & St. L.....	1943	3,010	15,994	19,004	1.9	43,328	2,497	1,161	31.9	1,762	85.7	20,322	95	174.6
	1942	5,043	14,037	19,080	1.9	38,599	2,242	946	26.8	1,338	75.6	14,827	101	167.5
Pere Marquette.....	1943	3,344	9,868	13,212	2.3	34,418	2,066	980	33.3	1,234	58.0	7,993	100	116.3
	1942	5,841	7,417	13,258	2.9	31,986	1,821	783	27.9	774	42.1	5,079	101	92.1
Pitts. & Lake Erie.....	1943	3,792	8,326	12,118	3.8	47,775	3,668	2,144	52.2	558	17.5	29,981	97	68.7
	1942	7,225	6,329	13,554	8.1	43,079	3,320	1,900	47.9	434	14.3	26,704	98	62.6
Wabash.....	1943	7,429	13,230	20,659	1.1	43,934	2,346	1,184	31.2	1,345	62.4	11,668	115	126.5
	1942	8,485	11,884	20,369	1.0	40,925	2,081	854	24.8	930	53.9	8,062	120	98.8
Central Eastern Region:														
Baltimore & Ohio.....	1943	39,060	48,594	87,654	2.5	29,410	2,366	1,159	35.8	1,062	47.4	16,385	155	105.5
	1942	44,071	44,001	88,072	2.6	28,579	2,202	1,019	31.8	841	41.6	11,824	159	95.6
Central of New Jersey†.....	1943	5,843	24,450	30,293	.8	27,252	2,400	1,248	38.8	393	16.4	16,731	146	108.9
	1942	7,011	18,508	25,519	2.1	28,482	2,238	1,103	35.7	343	16.0	12,930	140	96.6
Chicago & Eastern Ill.....	1943	2,169	5,138	7,307	3.5	35,235	2,273	1,043	33.3	1,313	66.3	10,478	128	139.5
	1942	2,497	3,360	5,857	3.4	29,797	1,684	770	29.1	854	43.1	5,258	141	76.9
Elgin, Joliet & Eastern.....	1943	9,075	8,114	17,189	3.2	16,749	2,184	1,171	43.3	328	12.1	14,092	148	98.8
	1942	8,831	8,675	17,506	3.1	15,267	2,152	1,089	39.1	295	12.3	13,441	143	102.6
Long Island.....	1943	13	4,407	4,420	.3	6,493	831	353	32.3	92	5.1	1,030	334	53.1
	1942	57	4,318	4,375	1.4	5,862	842	335	30.0	73	4.5	842	352	46.2
Pennsylvania System.....	1943	132,176	120,717	252,893	2.5	32,192	2,655	1,281	35.3	737	33.8	19,080	140	103.9
	1942	151,018	102,872	253,890	4.4	34,255	2,551	1,163	30.7	633	32.3	16,135	128	96.3
Reading.....	1943	14,831	25,127	39,958	2.8	29,803	2,460	1,331	43.0	718	27.1	19,899	128	92.6
	1942	18,573	20,536	39,109	5.8	27,466	2,225	1,155	38.6	581	23.7	15,556	138	83.1
Pocahontas Region:														
Chesapeake & Ohio.....	1943	29,702	15,069	44,771	1.0	51,132	3,734	2,092	48.6	1,583	58.0	24,700	85	88.6
	1942	42,077	12,963	55,040	1.0	50,012	3,489	1,915	44.9	1,049	40.8	18,944	85	74.8
Norfolk & Western.....	1943	26,896	7,888	34,784	2.0	56,898	3,877	2,159	49.3	1,652	56.8	28,113	99	108.3
	1942	35,122	6,813	41,935	1.4	56,030	3,587	1,907	44.6	1,134	43.9	22,516	98	95.8
Southern Region:														
Atlantic Coast Line.....	1943	8,256	21,327	29,583	2.7	28,670	1,850	828	30.6	980	50.8	6,104	111	105.0
	1942	10,970	13,835	24,805	4.6	25,746	1,543	594	23.8	769	51.6	3,707	116	101.4
Central of Georgia†.....	1943	2,310	6,059	8,369	1.2	27,423	1,569	753	31.9	961	42.2	4,505	126	102.1
	1942	3,147	5,536	8,683	.4	25,454	1,366	582	25.5	666	36.1	3,165	130	91.2
Gulf, Mobile & Ohio.....	1943	2,531	7,014	9,545	1.0	40,047	2,238	1,117	34.0	1,600	67.9	7,508	116	142.0
	1942	3,023	4,930	7,953	1.5	35,694	1,996	885	26.8	1,000	52.8	4,117	118	108.0
Illinois Central (incl. Yazoo & Miss. Vv.).....	1943	19,294	32,152	51,446	1.0	41,111	2,615	1,245	34.7	1,490	69.5	12,194	122	99.1
	1942	26,752	27,169	53,921	1.1	36,080	2,195	986	30.6	1,082	56.2	8,760	130	90.8
Louisville & Nashville.....	1943	28,260	14,513	42,773	2.4	26,665	1,790	927	38.1	1,106	46.2	10,503	133	128.6
	1942	36,418	13,428	49,846	1.8	25,969	1,687	819	34.3	800	37.8	8,292	138	123.0
Seaboard Air Line*.....	1943	7,576	21,193	28,769	1.4	27,038	1,840	861	31.9	983	45.1	6,722	127	124.2
	1942	9,034	11,557	20,591	2.0	26,791	1,621	670	25.5	878	51.2	4,387	134	111.1
Southern.....	1943	17,668	28,969	46,637	1.7	23,790	1,442	681	31.0	998	46.7	7,384	151	115.8
	1942	19,478	25,669	45,147	3.7	23,503	1,405	611	26.5	834	46.5	5,798	152	101.2
Northwestern Region:														
Chi. & North Western†.....	1943	21,622	28,366	49,988	4.2	30,472	2,093	933	31.5	626	31.0	4,002	139	83.1
	1942	28,887	26,956	55,843	3.8	30,491	2,048	825	26.5	492	28.7	3,358	132	71.1
Chicago Great Western.....	1943	1,353	3,856	5,209	1.7	34,194	2,016	938	31.2	1,671	75.8	6,499	133	139.4
	1942	1,712	4,037	5,749	1.5	35,176	1,911	756	25.1	1,249	75.9	5,043	129	125.3
Chi., Milw., St. P. & Pac.†.....	1943	26,882	25,126	52,008	1.5	31,552	2,098	1,026	34.0	1,028	44.8	5,077	135	105.5
	1942	33,307	23,557	56,864	1.3	33,446	2,101	924	29.4	800	42.8	4,245	125	92.5
Chi., St. P., Minneap. & Om.....	1943	1,482	6,937	8,419	8.9	22,860	1,697	787	33.0	728	34.2	3,771	124	73.9
	1942	1,530	6,086	7,616	5.2	21,711	1,612	691	27.2	612	33.0	3,311	127	71.5
Duluth, Missabe & I. R.....	1943	14,731	472	15,203	3.1	14,717	1,055	475	30.0	30	* 1.8	838	190	23.7
	1942	13,223	623	13,846	2.6	15,024	1,172	503	27.2	30	1.9	750	198	14.5
Great Northern.....	1943	25,292	14,743	40,035	2.2	34,720	2,374	1,169	34.1	1,032	42.6	5,447	117	86.0
	1942	27,167	14,241	41,408	2.6	36,302	2,271	973	28.4	863	46.0	4,398	114	80.8
Min., St. P. & S. St. M†.....	1943	7,844	5,939	13,783	4.3	27,558	1,640	795	33.4	908	40.7	2,972	115	125.1
	1942	9,803	5,691	15										

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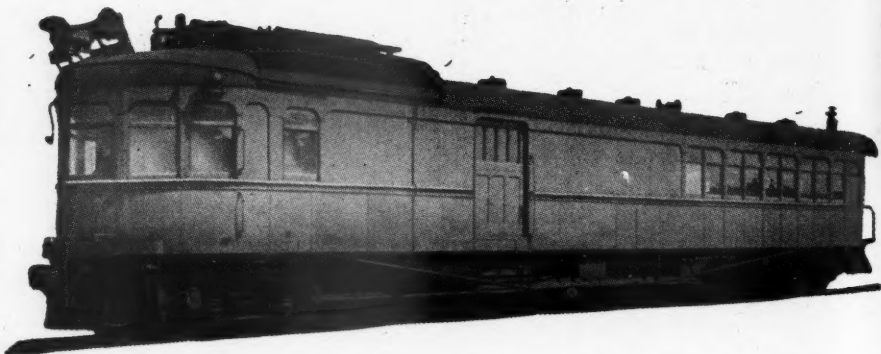
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